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An Examination of the Catch Nurture Program in the Treatment of Children's Mental Health Disorders

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AN EXAMINATION OF THE CATCH NURTURE PROGRAM IN THE TREATMENT OF CHILDREN'S MENTAL HEALTH DISORDERS

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Dissertation Approval

This is to certify that the thesis presented to us by Jessica Avart on the 3rd day of December, 2010, in partial fulfillment of the requirements for the degree of Doctor of Psychology, has been examined and is acceptable in both scholarship and literary quality.

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Abstract

School-based mental health services are in high demand due to the increased prevalence of diagnosable mental health disorders among the pediatric population, Attention Deficit/Hyperactivity Disorder (ADHD) foremost among them. The majority of research examining school-based services has been conducted in highly controlled settings and there has been a lack of research investigating such services within the actual school environment. The purpose of this study was to investigate the Catch Nurture Program, a school-based intervention, in the treatment of school-aged children with behavioral and/or emotional disturbances in the real-world setting. This study also examined the impact of gender and diagnosis on the program's effectiveness. The Nurture Program was evaluated by examining archival data (Achenbach CBCL and TRF) that had been collected on 115 students enrolled in the program for at least 4 months. The internalizing, externalizing, and ADHD subscales of the CBCL and TRF were examined at the time of intake and again 4 months later to evaluate the participants' progress over time. All of the participants attend public elementary schools located in low income, inner-city communities in South Philadelphia. The participants' ages range from 6 to16 years old; 73% are male; 73% are African American. The results of this study indicated that both parents and teachers observed small, but significant improvements in the participants' externalizing behaviors over time. However, only parents observed improvements in their children's ADHD symptoms over time. In addition, when comparing children diagnosed with ADHD to children without the disorder, parent reports showed that the internalizing behaviors of participants without ADHD are improving more significantly overtime. Finally, teacher reports showed that the female participants' internalizing behaviors are

improving over time, compared with males. Overall, although this study demonstrates some significant improvements in the participants' behaviors overtime, all of the effect sizes are small, and much lower compared with what has typically been found by other researchers examining school based intervention programs. Furthermore, because of the unstructured nature of the program under investigation, it is unknown exactly what interventions are being implemented on a consistent basis, therefore making it difficult to assess what is responsible for producing change among the participants. There is no assurance regarding the integrity of the implementation of the intervention components, and deviations from the program components could have produced unintended consequences on program outcomes. This study highlights the importance of standardizing community interventions as a means of establishing treatment integrity, because this is one of the most important aspects of treatment outcome research and a key ingredient to intervention success.

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Chapter One: Introduction

Statement of the Problem

The term "school-based services" has been used to define a broad range of services associated with the education sector's efforts to assess and treat children's mental health, academic, and developmental problems (Leslie, Lambros, Aarons, Haine, & Hough, 2008). School-based services are in high demand because of the high prevalence of diagnosable mental health disorders in the pediatric population. Although several effective school-based programs have been identified through research, a large gap exists between research and practice. The majority of the research examining school-based mental health programs has been conducted in highly controlled settings; however, there has been a lack of effectiveness research conducted in the actual school environment. As a result, it difficult to know whether or not the findings from efficacy trials generalize to community practice (Owens, Murphy, Richerson, Girio, & Himawan, 2008). Furthermore, although the use of school-based services continues to grow, it is unknown if the services being provided include evidence-based components and demonstrate positive outcomes (Rones & Hoagwood, 2000).

One of the most common disorders affecting children in the school setting is Attention Deficit/Hyperactivity Disorder (ADHD), occurring in 3% to 7% of school-age children (American Psychiatric Association, 2000). Despite its prevalence, treatment studies examining available school-based services for youth with ADHD are lacking. It is essential to understand what is effective in treating this particular population because the behaviors most often observed in children with ADHD typically manifest themselves in the school setting (Leslie et al., 2008). In addition, school systems are mandated to

provide classroom accommodations for youth impaired by ADHD (U.S Department of Justice, 2004). Early identification and effective treatment for children with ADHD is essential; left untreated, the symptoms associated with ADHD have the potential to impact, critically, a child's intellectual development. Research suggests that 50% to 80% of students with ADHD may fall behind in school, resulting in their failure to acquire the necessary skills for future academic success.

The difficulties associated with ADHD are further exacerbated by the co-occurrence of ADHD and learning disorders, which ranges from 11% to 30% (Leslie et al., 2008). Furthermore, up to 50% of children with ADHD often experience high rates of other comorbid mental health problems, such as anxiety, depression, conduct disorders, and substance abuse, and these co-occurring disorders complicate the ability to treat these children (Mrug, Hoza, Gerdes, Hinshaw, Arnold, Hechtman, & Pelham, 2008). Consequently, there is a heightened the demand for effective school-based services for children with ADHD and a need for translational research studies to examine the quality and effectiveness of such services in real-world settings.

Purpose of the Study

The purpose of this study was to examine the Catch Nurture program, a school-based intervention, in the treatment of school-aged children with behavioral and/or emotional disturbances in a real-world setting. Both parent and teacher reports of child behavior were analyzed over time to assess for changes in behavior during the children's participation in the Nurture program. The present study aimed to evaluate whether or not this program produces changes in the participants' behavior over time as it is currently being implemented in the South Philadelphia community. A second purpose of this study

was to explore whether or not the Nurture program differentially impacts children diagnosed with ADHD. In other words, does having a diagnosis of ADHD hinder the effectiveness of the program? Additionally, this study explored whether or not the Nurture program differentially impacts boys versus girls.

Relevance to Goals of the Program

The objective of this study is supported by the overarching goal of producing practitioner-scholars who have an appreciation and comprehension of the broad and general knowledge base that informs the profession of psychology, as outlined by the Philadelphia College of Osteopathic Medicine (PCOM). This study aimed to demonstrate a significant understanding of scientific psychology, and the implications of research on clinical practice. The findings from this study have the potential to offer significant knowledge regarding the treatment of children's mental health disorders within the school setting.

Chapter Two: Review of the Literature

School-Based Mental Health Services

Overview. The term, "*school-based services",* has been used to define a broad range of services associated with the education sector's efforts to assess and treat children's mental health, academic, and developmental problems. Such services occur both in the general education and in special education settings and the content ranges from informal academic and behavioral services to more structured, legally binding services (Leslie, Lambros, Aarons, Haine, & Hough, 2008). School-based mental health services are in high demand, because approximately one in five children has a diagnosable mental condition, and one in ten children suffers from a serious emotional disorder that affects his or her ability to function daily (Crespi, 2009; NIHCM, 2005). The large number children in the United States who are suffering from mental illnesses have led to the development of a public health crisis in this country (NIHCM, 2005).

Children with mental health problems tend to present with a range of social, emotional, and behavioral difficulties (SEBD). When such difficulties are left untreated, these children are at a substantially higher risk for negative long-term outcomes such as dropping out of high school, substance abuse, a lack of job success, and other health problems (Cooper, 2008; NIHCM, 2005). SEBD is a broad term referring to a diverse array of behaviors ranging from externalizing behaviors such as: impulse control, inattention, hyperactivity, aggression, non-compliance, vandalism, and bullying to internalizing behaviors such as: social withdrawal, anxiety, depression, extreme passivity, eating disorders, substance abuse, and self harm (Cooper & Tiknaz, 2007). Children with SEBD are known to have poorer academic outcomes compared with children who have

other disabilities. They also appear to be less socially adjusted, and are more often the subject of bullying and disciplinary actions (Marder, Wagner, & Sumi, 2003). In general, social, emotional, and behavioral regulation skills have become increasingly well recognized as key ingredients for school success. It is believed that children who have difficulties in regulating these areas of their lives have a diminished ability to learn and benefit from the school environment (Upshur, Wenz-Gross, & Reed, 2009). In addition, children who exhibit disruptive behavior patterns can have a negative influence on the social and academic environment of other children (Conduct Problems Prevention Research Group, 1992). With the implementation of effective school-based prevention and intervention programs, the school community has the opportunity to minimize negative consequences for children and their families, and also to promote successful learning and academic achievement (Upshur, Wenz-Gross, & Reed, 2009).

Because of the amount of time children spend in school, the school environment is an optimal setting in which children's mental health problems can be prevented, identified, and/or treated. Successful school-based services require a collaborative effort among health care professionals, teachers, school administrators, mental health specialists, and families. With this collaboration, it has become widely recognized that school-based services have the potential to support, successfully, a large number of children with mental health problems. Such services provide the opportunity to facilitate and improve children's academic, social, and emotional functioning. In general, it has been established that students who receive support and preventative care perform better in school (e.g., Kratochwill, McDonald, Levin, Scalia, & Coover, 2009; Evans, Axelrod, & Langberg, 2004). Elementary schools that have mental health services in place have

reported fewer referrals to special education, an overall better school atmosphere, and declines in disciplinary actions (CSG, 2007). Although the need for effective school-based services has been firmly established, the U.S. mental health care system has not been able meet the demand of children's needs. Approximately four of five children who are in need of mental health services are not receiving them (Juvonen, Le, Kaganoff, Augustine, & Louay, 2004). There is a pressing need for the availability of effective school-based mental health services because such services have the potential to increase, significantly, access to treatment for children (Vernberg, Roberts, & Nyre, 2008). Research suggests that children and their parents experience fewer treatment barriers when utilizing school-based services as opposed to clinic-based treatment, making it more likely for parents to enroll and maintain their children in treatment (Evans, 1999).

Policies and laws. The psychosocial needs of children are overwhelming the resources of schools and have hindered their ability to educate children successfully. In an attempt to resolve this issue, state legislators, Center for Disease Control and Prevention (CDC) officials, state health department officials, and public health experts have come together to identify solutions to the problem. Together, these groups have played an essential role in determining the structure and resources available to state and local agencies that are dedicated to the public's health. In 1975 the first federal law (PL 94-142) was passed, mandating equal access to public education for children with disabilities. This law led to the development of full-service schools and school-based mental health programs (Cappella & Larner, 1999). The aim was to integrate educational and mental health goals, focusing on the need for schools to look beyond academic achievement (Lawson & Sailor, 2000).

Since the passing of the first law surrounding education and mental health, as discussed previously, other policy-level changes have been established in school law and in U.S. Department of Education regulations. The Individuals with Disabilities Education Improvement Act of 2004 (IDEIA, 2008) ensures that schools provide prevention and intervention services to students with disabilities. The President's Commission on Excellence in Special Education (U.S. Department of Education, 2002) recommended that schools utilize a prevention-focused treatment model because of the failure of more traditional treatment approaches. A final example of policy-level changes is The No Child Left Behind Act of 2001 (NCLB, 2002). This policy focused on the need for schools to take responsibility for providing support to students at-risk for failing. It requires the implementation of prevention and intervention programs that have been proven effective through scientific research. In order to put these policies into practice effectively, the need for extensive funding continues. The U.S. Department of Education has been responsible for providing funding for research on prevention programs, and federal funding has been provided as well. Over the last several years, there has been an increase in the number and quality of school mental health programs; however, research and funding continue to be necessary in order to develop and implement more programs to meet children's needs (Kratochwill, McDonald, Levin, Scalia, & Coover, 2009).

Prevention programs. The U.S. Surgeon General advocates that schools are the primary location for recognizing mental health disorders in children (U.S. Public Health Service, 2000). Research has suggested that school-based prevention and health promotion programs can prevent and/or improve many mental health problems, as well as promote optimal social and emotional development among children. Such programs have

demonstrated improvements in school readiness, general health, and academic achievement. In addition, prevention programs have shown to be more cost effective, saving money with regard to special education, welfare assistance, and the criminal justice system (CSG, 2007).

Three different levels of prevention have been identified in schools: universal, selective and targeted. Universal programs are presented to the entire school population and are designed to enhance overall mental health. Selective programs target children who are at-risk for developing mental health problems. These children are identified, based on known risk factors such as divorce or trauma. Last, targeted programs consist of early interventions that are designed to target children with early signs or mild symptoms of a mental health disorder (Stallard, Simpson, Anderson, Hibbert, & Osborn, 2007).

Because of an increased emphasis on prevention, more attention has been focused on the development and implementation of school-based prevention programs. These programs are aimed at reducing the risk for the development of SEBD among school-age children. In general, these programs have been designed to promote the development of social and emotional skills in children and create safe environments. The broad goal is to build children's resources by focusing on positive factors that are found to promote healthy development. Such programs have made a positive impact on children's overall school success and furthermore, they have decreased the incidences of risky behaviors among children (NIHCM, 2005). A number of school-based prevention programs have been developed in an effort to recognize and prevent the development of SEBD in children; among these are: School-Wide Positive Behavioral Interventions and Supports (PBIS; Lewis & Sugai, 1999); Families and Schools Together (FAST; McDonald,

Billingham, Conrad, Morgan, & Payton, 1997); Promoting Alternative Thinking Strategies (PATHS; Greenberg, Kusche, Cook, & Quamma, 1995); and Project ACHIEVE (Knoff & Batsche, 1995).

PBIS is a school-wide prevention model based on the idea that all students can benefit from well-implemented, evidence-based practices for improving student behavior. PBIS implements a multi-tiered continuum of behavior supports, ranging from prevention for all students to highly individualized supports. The integration of all three types of prevention (universal, selective, and targeted) allows for practitioners and administrators to plan for the delivery of effective support services for all students, not only those with intense needs (Horner & Sugai, 2005). PBIS integrates four important elements that are relevant to educating all students; these include: operationally defined and valued outcomes, behavioral and biomedical science, research-validated practices, and systems change both to enhance the quality of the education environment and to reduce behavioral problems. These elements provide schools with the ability to educate all students, utilizing research-based, school-wide, classroom and individualized interventions (OSEP Center on Positive Behavioral Interventions and Supports, 2004). The effectiveness of PBIS has been evaluated in a number of randomized control trials and quasi-experimental studies, all of which have demonstrated positive outcomes. Specifically, the implementation of PBIS at the elementary level has led to significant reductions in overall levels of problem behavior among at-risk students (Horner, Sugai, Smolkowski, Todd, Nakasato, & Esperanza, 2009; Bradshaw, Reinke, Brown, Bevans, & Leaf, 2008; Barrett, Bradshaw, & Lewis-Palmer, 2008; Luiselli, Putnam, Handler, & Feinberg, 2005).

The FAST program is a universal, multiyear prevention program designed to build protective factors for children because it empowers parents to be the primary prevention agents. The goal of the program is to help at-risk youth succeed at home, in the community, and at school. The program offers structured interventions aimed to strengthen the bond between parent and child, improve family functioning, and expand the family's social networks in an effort to decrease the risks for SEBD in the child. The interventions consist of parent training, case management, social skills training, academic tutoring, and teacher-based classroom interventions to improve classroom management (Kratochwill, McDonald, Levin, Scalia, & Coover, 2009). This program has been successfully implemented in over 800 schools and is recognized for its cultural sensitivity to diverse populations (McDonald & Frey, 1999). Three randomized, controlled trials of the FAST program have demonstrated the program's positive effects on parental involvement, children's oppositional and aggressive behaviors, and teacher's perceptions of child performance, with effect sizes (Cohen's *d),* ranging from .23 to 1.92 (Abt Associates, 2001; McDonald, Moberg, Brown, Rodriguez-Espiricueta, Flores, Burke, & Coover, 2006; Kratochwill, McDonald, Levin, Young Bear-Tibbetts, & Demaray, 2004).

The PATHS program is a research-based violence prevention program. It aims to promote effective interpersonal problem-solving skills, foster children's ability to express and understand emotions, encourage the development of self-control, and support a positive peer environment. The purpose of the program is to enhance social competence and social understanding in children as well as to facilitate the education process in the classroom. The program's curriculum is manualized, and it is taught three times a week, for twenty minutes by the classroom teacher (Greenberg, Kusche, Cook, & Quamma,

1995). A number of randomized controlled trials of the PATHS program have demonstrated the program's positive outcomes related to children's emotional expression and understanding, and to their self-control. Furthermore, the program has shown to be effective in modifying children's cognitions, beliefs, and behaviors that could increase the risk of SEBD (e.g., Greenberg, Kusche, Cook, & Quamma, 1995; Kam, Greenberg, & Kusche, 2004).

Last, project ACHIEVE is a multi-level approach designed to help schools, communities, and families develop and strengthen their children's protective factors and self-management skills. Within the school setting, school-wide positive behavioral support systems (PBIS) and academic prevention programs are implemented in order to meet the needs of all students. In addition, project ACHIEVE offers more comprehensive services for students with intensive needs. The overarching goal of the program is to reduce the risk of academic and social failure among at-risk children (Knoff & Batsche, 1995). Project ACHIEVE was originally established in 1990, and over the previous two decades, components of the program have been implemented in over 15,000 schools across the United States. This program has been evaluated, using both a matched-comparison school and a single-school multiple baseline method. The results indicated that in the three years after the implementation of the program, significant reductions were observed in the number of special education referrals (75%), disciplinary referrals (28%), suspensions (64%), and grade retention (90%) (Knoff, 2008). In addition, the school utilizing Project ACHIEVE established significantly lower rates of these variables than the comparison school (Knoff & Batshe, 1995). Although these studies have demonstrated positive outcomes, the effectiveness of Project ACHIEVE has not been

examined using randomized controlled trials, and this is an important consideration for future researchers.

It has been argued that the most effective prevention programs for children at-risk for developing mental health problems include the implementation of early and ongoing developmentally appropriate school-based interventions. Such programs enable schools to function as a vital resource for important psychological services (Upshur, Wenz-Gross, & Reed, 2009). The potential for early detection in the school system is greater because of children being identified as having behavior problems in the classroom (NIHCM, 2005). Symptoms of behavior problems can be identified as early as 3 to 5 years old, and intervention efforts are more likely to be successful at this critical period of academic and social development for children (Leslie, Lambros, Aarons, Haine, & Hough, 2008). Despite the increased emphasis on prevention and the availability of effective programs, most school systems do not implement them. Unfortunately, many children do not receive services until they display sufficient impairment and a lack of response to accommodations provided in the regular classroom (NIHCM, 2005).

Intervention programs. School systems provide numerous opportunities for clinicians, teachers, administrators, and families to support and treat children diagnosed with mental health disorders. In order to take advantage of these opportunities, evidence-based school mental health programs must be implemented. Although research clearly indicates the benefits of utilizing evidence-based practices, the implementation of such services in education is slow. Although many existing school-based mental health programs have been shown to be effective through research, (e.g., PBIS, FAST, PATH, & Project ACHIEVE), they are being underutilized in the school setting. However, these

programs are becoming increasingly more prominent, as researchers continue to work towards closing the gap between children's needs and effective programs to meet these needs (Weist & Albus, 2004).

Based on the promising outcomes associated with school-based interventions, the Expanded School Mental Health (ESMH) framework has been articulated as a means of sustaining these outcomes. The term ESMH is used to describe partnerships between schools and community programs/agencies that provide comprehensive mental health services, including assessment, case management, therapy, prevention, and special education to children in general. This framework reflects the core elements of effective mental health programs in schools, because it implies that schools and communities must work collaboratively to provide evidence-based services in which mental health is integrated into the school community (Weist & Albus, 2004). The large number of services provided within this structure helps address the issue that many children in need of mental health care do not receive it. Researchers have found that students in schools with ESMH services were more likely to be referred for services when compared with students in non-ESMH schools (52% versus 28%), making it more likely for them to receive the services they need (Bruns, Walrath, Glass-Siegel, Acosta, Anderson, & Weist, 1999).

The Intensive Mental Health Program (IMHP) was developed to treat children in the public school setting with Serious Emotional Disturbance (SED) (Vernberg, Roberts, & Nyre, 2008). Approximately 5 to 9% of school-age children meet the criteria for SED, and these children tend to exhibit impairments in functioning across multiple settings (Friedman, Katz-Levey, Manderschied, & Sondheimer, 1996). The IMHP provides

comprehensive and multimodal psychosocial and pharmacological interventions in the special education classroom setting as well as within the community. The program aims to counter the financial barriers, low utilization of community mental health services, and fragmented services typically received by children attending public schools (Vernberg, Roberts, & Nyre, 2008). Evaluations of the program have indicated positive outcomes resulting from collaboration among parents and professionals, consultation with parents and teachers, behavioral management plans, and evidence-based individual and group psychotherapy for the child (Roberts, Vernberg, Biggs, Randall, & Jacobs, 2008). In addition, research has demonstrated that IMHP has produced noteworthy improvements across multiple domains for approximately 75% of the children who have participated. However, the key components to treatment success have not been isolated. Because federal law requires that children receive the most appropriate education placement, a comparative examination of the program with a control group has not been conducted. This has limited researchers' ability to conduct a randomized clinical trial of treatment effectiveness. Instead, evaluations of IMHP have been conducted in the community setting, using open trial methodology. Although this limits the opportunity to report promising results, researchers have observed that IMHP implements the necessary components of strong school-based programs outlined by previous studies (e.g., Rones & Hoagwood, 2000). However, even though IMHP has been considered a reasonably successful treatment option for children suffering from SED, the efficacy of the program remains unknown (Roberts, Vernberg, Biggs, Randall, & Jacobs, 2008).

The RECAP (Reaching Educators, Children, and Parents) program is a school-based mental health intervention that was established to treat children with concurrent

internalizing and externalizing problems. A significant number of children experience problems across both domains, making this an important area of research. The RECAP program combines and modifies existing treatments that have been validated for nonconcurring internalizing and externalizing problems. Treatment includes: coping skills training, problem-solving skills training, and parents training, all of which are empirically supported intervention strategies. A preliminary research study utilizing a treatment and control group has generated support for the combination of treatments listed above for concurrent mental health problems. Some significant effects were observed in the amelioration of symptoms and in the prevention of deterioration of functioning; however, there were no treatment effects observed for peer relationships, grades, or attendance. These results provide some initial support regarding the efficacy of the RECAP program and for the validity of the model. However, more evaluations are necessary before the actual efficacy of the program can be established (Weiss, Harris, Catron, & Han, 2003).

To the best of their ability, research-based intervention programs utilize existing evidence-based treatment modalities. Several behavioral interventions have been demonstrated to treat children with SEBD effectively. For instance, both behavioral classroom interventions and behavioral parent training are considered evidence-based treatments for children with Attention Deficit Hyperactivity Disorder (ADHD), Oppositional Defiant Disorder (ODD), and early-onset conduct problems (Pelham, Wheeler, & Chronis, 1998; Brestan & Eyberg, 1998). However, little research has examined whether or not the findings from efficacy trials can be generalized to the school setting, particularly in underserved communities. In an effort to explore this question

further, a school-based intervention program that embodies the ESMH framework was created and evaluated, utilizing three empirically supported interventions for treating children with disruptive behaviors; these include: a daily report card procedure, teacher consultation, and behaviorally based parent training sessions. (Owens, Murphy, Richerson, Girio, & Himawan, 2008). The effectiveness of this program was evaluated in an underserved community in an effort to fill the existing gap in research. The participants in this study consisted of 117 children in Kindergarten through sixth grade from five different schools that had been referred by their teachers because of consistent problems with inattention and disruptive behavior. Although the participants were not randomized to the treatment or waitlist condition, the schools were randomly assigned to one or to the other. When compared with other evidence-based treatments implemented by community members, the results from this study demonstrate that these treatments are able to produce similar effect sizes when transported to children in underserved communities. The combined treatment resulted in a reduction of children's ADHD symptoms and aggressive behaviors as well as to improvements in their overall functioning (Owens, Murphy, Richerson, Girio, & Himawan, 2008).

In addition to intervention programs, on-site mental health consultation approaches have been endorsed as a means of meeting the needs of children with mental health problems. These programs involve mental health specialists who work collaboratively with families, teachers, and school administrators to prevent, identify, treat, and reduce the negative impact of mental health problems in children (Alkon, Ramler, & MacLennan, 2003). Consultation-based services can be particularly useful in schools located in high poverty communities because they can productively utilize

limited mental health resources to impact the children positively (Ringeisen, Henerson, & Hoagwood, 2003). Although experimental research studies using some form of control have demonstrated a direct effect of such services on child outcomes (e.g., Upshur, Wenz-Gross, & Reed, 2009; Perry, Dunne, McFadden, & Campbell, 2008; Gilliam, 2007), their evolving nature has made it difficult to establish replicable program models. As a result, the efficacy of consultation-based services has yet to be documented. However, based on preliminary success, continued evaluation of consultation-based services is warranted because research has demonstrated the fact that they have the potential to produce significant effects in children identified with mental health problems (Upshur, Wenz-Gross, & Reed, 2009; Perry, Dunne, McFadden, & Campbell, 2008; Gilliam, 2007).

School programs for children with ADHD. According to the Centers for Disease Control and Prevention (CDC, 2005), the incidence of attention-deficit hyperactivity disorder (ADHD) in the general population of school-aged children in the U.S. is approximately 7.8%; as of 2006, 4.5 million children between the ages of 5 to 17 years old have been diagnosed with ADHD. The increased number of children diagnosed with ADHD over the past several years has seriously impacted the educational system; schools, therefore, must take responsibility for improving the identification, assessment, and delivery of effective interventions for children with ADHD. The symptoms of the ADHD tend to cause problems in school functioning, and the chronic nature of the disorder can carry with it poor long-term academic adjustment (Biederman, Monuteaux, Doyle, Seidman, Willens, Ferero, Morgan, & Faraone, 2004). The specific problems

experienced by children with ADHD in the school setting will be discussed in greater detail in a subsequent section.

School-based services have been found to be especially well suited for children with ADHD because of the high levels of school dysfunction they exhibit (Daly, Creed, & Xanthopoulos, 2007). Empirical studies of school-based services for children with ADHD have supported the efficacy of two main approaches: behavioral and academic interventions. Classroom behavioral interventions involve consultation with the child's teacher regarding the implementation of appropriate behavior modification strategies. Teachers are instructed about how to identify children's problem behaviors using functional behavior analysis. Based on the assessment results, different strategies are then utilized by the teacher in the classroom setting (Chronis, Jones, & Raggi, 2006). Three classroom behavioral interventions have demonstrated to target children's ADHD symptoms effectively, including: antecedent-based strategies, consequent-based strategies, and self-management strategies. These interventions will be discussed in a subsequent section. (DuPaul & Weyandt, 2006).

Although behavioral interventions focus on reducing problematic behaviors and increasing task engagement, they pay modest attention to the academic progress of the students. In many cases, children will become less disruptive in response to the behavioral interventions; however, this does not imply that they are succeeding academically. The behavioral manifestations of ADHD are frequently coupled with academic impairment, making academic achievement an important target of treatment. Academic interventions for children with ADHD focus on changing antecedent conditions, such as instruction and materials, in an effort to improve both behavioral and

academic outcomes (DuPaul & Weyandt, 2006). A number of academic approaches have been developed in order to support children with ADHD. These include task and instructional modifications, peer tutoring, computer-assisted instruction, and strategy training (Chronis, Creed, & Xanthopoulos, 2007). These interventions will be discussed in a subsequent section.

Behaviorally based classroom interventions are considered to be an empirically supported treatment for children with ADHD. These interventions have been widely investigated, with results indicating significant effects on task engagement, disruptive behavior, and parent and teacher ratings. In contrast, few studies have examined the effectiveness of the academic interventions previously mentioned. Although preliminary support for their efficacy exists, they do not yet meet the criteria for an empirically supported treatment (Chronis, Jones, & Raggi, 2006). It is necessary for treatment studies to move beyond focusing solely on the reduction of disruptive behaviors, because children with ADHD suffer from deficits across multiple areas of school functioning (DuPaul & Weyandt, 2006). Because of the high prevalence of ADHD within the school-age population, there is a pressing need for more outcome research in this area.

Behavioral and academic interventions target different areas of impairment. Research suggests that a combination of these treatments may be necessary in order to impact the broad range of impairments associated with ADHD. Based on this rationale, the Challenging Horizons Program (CHP) was created as a school-based treatment program for middle school children with ADHD. The CHP is an after school, manualized treatment program, which integrates family, academic, social, and behavioral interventions to meet each child's needs. Some of the specific interventions include:

organizational and study skills training, behavior modification, the daily report card, and social skills training. A pilot study established the fact that participants in the CHP program demonstrated significant improvements both in social and in academic functioning, with most effect sizes in the moderate to large range (Evans, Axelrod, & Langberg, 2004). However, these results must be interpreted with caution, because there was no control group and the sample size was very small (*N*=7). In addition, researchers have examined the CHP program using a quasi-experimental design, also with a small sample size (*N=13),* and similar improvements were observed among the participants. It is important to note that all of the participants in this study were Caucasian, and this limits the generalizability of the results (Evans, Langberg, Raggi, Allen, & Buvinger, 2005). This preliminary data suggests that the program has the potential to be an effective treatment for middle-school children with ADHD; however, the program must be evaluated utilizing randomized controlled trials with a diverse population before any definitive conclusions can be made. Since the program's inception, researchers have been working on an integrated model, during which CHP would operate during the school day. A manual, similar to the original, has been created and implemented; however, data are still being collected and analyzed (Evans, Timmins, Sibley, White, Serpell, & Schultz, 2006). In general, the majority of the research regarding school-based services for children with ADHD has focused on individual interventions. Few studies have examined school-wide interventions, such as CHP, which target the multiple problems most commonly associated with ADHD (Evans, 2005). Multimodal programs must continue to be created and evaluated in an effort to provide effective services in the environment where children with ADHD exhibit their greatest impairment.

Research vs. practice. Although several effective school-based programs have been identified through research, a gap still exists between research and practice. There is much debate concerning the degree to which findings from efficacy trials generalize to community practice. In many cases, empirically validated interventions may not be acceptable, feasible, or effective when implemented in the school setting (Murray, Rabiner, Shulte, & Newitt, 2008). Most studies examining school-based mental health services have been conducted in a research or laboratory setting, but only a few have been conducted in the actual school setting (Owens, Murphy, Richerson, Girio, & Himawan, 2008). In a meta-analysis of 162 studies, it was found that less than 20% of the treatment outcome studies indicated children who were referred to services rather than those who were recruited for services. Studies have also failed to indicate children with comorbid conditions, or those receiving community-based services. These findings suggest that limited information is available concerning the extent to which evidence-based treatments are effective for children who are typically referred to mental health services within the community (Hawley & Weisz, 2005). More studies examining the effectiveness of school-based mental health programs must be conducted within the school and community setting. It is also necessary to examine the demographic, environmental, and cultural characteristics of the sample and setting in order to promote generalization of the results (Owens et al., 2008). Scientific research studies represent one way of determining program effectiveness, and as mentioned previously, there is more work to be done in this field. Many programs have shown to be effective through research; however, in many cases the generalizability of such findings is still unknown.

Response-to-Intervention (RtI) is an approach that has the potential to fill the gap between research and practice. RtI was born out of the reauthorization of the Individuals with Disabilities Education Act (IDEIA, 2008), which allows schools to use information regarding a student's response to scientific, research-based interventions as part of the evaluation process for specific learning disabilities. This approach was developed to track a student's progress and response to specific interventions aimed at improving academic, social, behavioral, and emotional functioning (Burns & Coolong-Chaffin, 2006). During the previous several years, there has been an increased focus on prevention within the educational system. This has pressed schools to incorporate research-based prevention and early intervention programs into ongoing school activities. In many ways, RtI is a result of these developing initiatives (Kratochwill, 2006). Many of the school-based mental health services previously discussed have the potential to fit within a multi-tiered prevention model, and could be included as a part of the RtI initiative (Kratochwill, McDonald, Levin, Scalia, & Coover, 2009). The framework behind the RtI model represents an opportunity to evaluate the effectiveness of school-based services in order to determine whether or not the findings from efficacy trials actually generalize to the community setting. Tracking a student's response to specific interventions could also provide information regarding the population for which the interventions are most effective. The utilization of the RtI approach has the potential to create a unifying framework to guide research and practice in this emerging field; however, research regarding its usefulness for this purpose is needed.

Underserved populations. Traditionally, mental health services have not been created for children living in poverty and they have rarely been examined in

impoverished settings. Children from such environments represent a population that has been significantly underserved with regard to mental health services (Weisz, Jensen-Doss, & Hawley, 2005). Along similar lines, minority children are less likely to have access to mental health services, and are more likely to receive poor care. Hispanic children, followed by African Americans, have the highest rate of unmet needs for mental health services; it is believed that minority children are more likely to come from impoverished backgrounds (CSG, 2007). Overall, research suggests that existing school-based services can be difficult to implement and sustain in any environment, but this is especially true in the case of impoverished settings. This finding is of significant importance because the need for mental health and academic support is greater within such communities (Weist & Paternite, 2006).

Poverty significantly impacts children's cognitive functioning, physical health, and social-emotional development (Duncan, Brooks-Gunn, & Klebanov, 1994; Korenman, Miller, & Sjaastad, 1995; McLeod & Shanahan, 1993). When compared with middle-income families, children from impoverished families tend to present with more severe SEBD (Wadsworth & Achenbach, 2005). In addition, these children are less likely to access or receive traditional mental health services, placing greater emphasis on the need for effective interventions to be offered in the school setting. Schools have the ability to decrease the negative impact of poverty on child functioning, but in order to do so, it is critical for researchers to promote the understanding of mental health interventions in this context. Using a translational research approach, researchers and practitioners could create a continuous feedback process through which context-driven information can be shared at every stage of the research process. Through the sharing of

such data, it is hoped that relevant and efficient mental health services and interventions can be created and implemented for children in poverty (Cappella, Frazier, Atkins, Schoenwald, & Glisson, 2008). Translational research will be discussed further in a subsequent section.

Schools have the opportunity to create positive outcomes for children in poverty, even in the face of risk. However, public schools located in impoverished communities often lack the resources to provide such support, placing these children at an even greater risk for negative long-term outcomes (Cappella, Frazier, Atkins, Schoenwald, & Glisson, 2008). In an effort to improve services in poor communities and to offer support to children in poverty, researchers have suggested the use of an ecological model of school-based mental health services. This model emphasizes the idea that the core function of school is to promote learning, and services should be implemented in the natural context of children's school experiences. In this context, learning goals are conceptualized as mental health goals, so that efforts made to improve school's ability to promote learning are directly applicable to meeting the mental health needs of children. Prevention is the first priority; however, more intensive interventions are offered after the effective implementation of universal strategies. The goal is to help all children, and reduce the number of students in need of more intensive treatment (Cappella, Frazier, Atkins, Schoenwald, & Glisson, 2008). Although this model offers a hopeful perspective on the treatment of children in poor communities, more formal research must be done so that effective interventions can be adapted for high poverty communities. There is a clear need for more effective services to become available to those most in need, including minority children and those from impoverished environments.

Thus far, this paper has discussed, rather broadly, school-based services and the general need to fill the gap between research and practice. The focus will now shift to an in-depth discussion about Attention Deficit Hyperactivity Disorder (ADHD), the most common disorder affecting children in the school setting.

Attention Deficit Hyperactivity Disorder

Definition. Attention Deficit Hyperactivity Disorder (ADHD) is a developmental disability in which a child experiences problems in the areas of: (1) sustained attention; (2) modulation of arousal (hyperactivity and emotional liability); and (3) inhibition of impulsive behavior (American Psychological Association (APA), 2000). Sustained attention refers to the ability to sustain concentration and motivated effort in a subjectively boring situation. Modulation of arousal refers to a lack of control of one's body and emotions. Inhibition of impulsive behaviors refers to one's ability to delay self-directed actions (Barkley, 1998). When a child is diagnosed with ADHD, he or she is diagnosed with one of three subtypes of the disorder: ADHD, Combined Type; ADHD, Predominantly Inattentive Type; or ADHD, Predominantly Hyperactive/Impulsive Type (APA, 2000). Diagnosis is currently based on criteria from the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)*, which lists nine behavioral characteristics for the inattentive type and nine behavioral characteristics for the hyperactive-impulsive type. In order to be diagnosed with the disorder, six of the nine inattentive and/or hyperactive/impulsive criteria must be observed, both at home and at school. The symptoms must significantly impair performance, be inconsistent with the child's developmental level, be presents for at least six months, and have had some symptoms present before age seven years old (APA, 2000).

According to the Center for Disease Control and Prevention (CDC, 2005), the incidence of ADHD in the general population of school-aged children in the U.S. is approximately 7.8 %. As of 2006, 4.5 million children between the ages of 5 and 17 had been diagnosed with ADHD. It is one of the most commonly diagnosed psychiatric disorders in children; in child clinical settings the rate of diagnosis is often greater than 50% (Barkley, 1998). The average age of onset for the disorder is three years old, and it is diagnosed three times more frequently in boys, compared with girls (Bloom & Cohen, 2006). Longitudinal research suggests that ADHD is a chronic disorder in which cognitive and behavioral symptoms typically emerge during childhood, and children likely continue to suffer from ADHD-related impairment into adulthood (Barkley, Fischer, Smallish, Fletcher, 2002). The cognitive and behavioral manifestations of this disorder consequently place children at a higher risk for academic, behavioral, and social difficulties (Evans, Timmins, Sibley, White, Serpell, & Schultz, 2006).

Investigations into the cause of ADHD have examined a variety of factors. Recent research has found that a number of factors likely contribute to the disorder, including: genetics, diet, and social and physical environments. Although many of these factors may increase the likelihood that a child will be diagnosed with ADHD, in most cases, they do not seem to give rise to the condition by themselves. Of the previously mentioned factors, only genetics has been demonstrated to have a causal relationship with ADHD, but the other factors have been shown to correlate only with the diagnosis of ADHD in children (Larsson, Larsson, & Lichtenstein, 2004). This distinction between cause and correlation is important because of the great amount of information parents receive about factors that may cause health risks to their children. It is essential for parents to

understand that although specific factors have been identified through research as being connected or co-related to the development of ADHD, these factors do not necessarily cause ADHD. However, the factors may influence the severity of the disorder; this is especially true in the amount of impairment the child may experience (Larsson, Larsson, & Lichtenstein, 2004).

As previously mentioned, genetics have been cited as the only reliably supported cause of ADHD in children (Nigg, 2006). ADHD tends to run in families, making it likely for such genetic influences to exist. Twin studies have indicated that ADHD is highly heritable, and genetics play a role in approximately 75% of cases. In addition, studies have indicated that 25% of close relatives in families of ADHD children also have ADHD, yet the rate is approximately 5% in the general population (Larsson, Larsson, & Lichtenstein, 2004). Many of the studies examining the influence of genetics on the development of ADHD have been retrospective, included small sample sizes, and have not included adequate comparison groups. However, despite such shortcomings, the results have produced significant evidence citing genetics as a contributing factor to the development of ADHD among children (Anastopoulos & Barkley, 1988; Nigg, 2006).

With regard to diet, researchers have investigated a possible link between the symptoms of ADHD and sugar or food additives. In particular, Feingold (1975) has suggested that more than 50% of children with ADHD develop their symptoms as a result of adverse reactions to food additives, as well as to naturally occurring salicylates. However, Feingold's conclusions were based on clinical observations, as opposed to experimental evidence (Schnoll, Burshteyn, & Cea-Aravena, 2003). In 1982, the National Institutes of Health held a scientific consensus conference to discuss the influence of diet

on ADHD symptoms. Generally, it was concluded that diet restrictions improved the symptoms of ADHD in about 5% of children, mostly young children with food allergies (National Institutes of Health, 1982). Data indicate that only a small group of children with ADHD respond to dietary interventions, and the specific elimination of food additives has not been shown to be a major factor in the reduction of hyperactive behavior (Schnoll, Burshteyn, & Cea-Aravena, 2003). Overall, there has been little empirical evidence demonstrating that sugar or food additives contribute to or exacerbate symptoms of ADHD among children (Anastopoulos & Barkley, 1988; Barkley, 2006).

Certain environmental factors such as alcohol and tobacco smoke exposure during pregnancy, and early exposure to lead or pesticides have also been implicated as contributing to the development of ADHD (Braun, Kahn, Froehlich, Auinger, & Lanphear, 2006). Both retrospective and prospective studies reveal significant associations between the level of maternal smoking/alcohol consumption and the degree to which their children experience symptoms of ADHD. It has also been shown that parents of children with ADHD tend to consume more alcohol and tobacco than control groups even when not pregnant (Nigg, 2006). What is not clear from this research is whether it is the exposure to the substances themselves which increases the risk of ADHD, or whether a third factor (such as parental ADHD) is related to the fact that both parents are more likely to consume alcohol or tobacco and to their children being more likely to have ADHD. As a result, it is necessary for researchers to continue to examine the possibility that alcohol and tobacco consumption may be causally related to ADHD and control for other confounding factors, such as genetics. In addition, high levels of lead in the bodies of children have also been shown to have a small, but consistent and

significant relationship with the symptoms of ADHD (Anastopoulos & Barkley, 1988). It should be noted that even at relatively high levels of lead, less than 38% of children are rated as hyperactive on a teacher rating scale, indicating that most lead-poisoned children do not go on to develop symptoms of ADHD (Needleman, Gunnoe, Leviton, Reed, Peresie, Maher, & Barrett, 1979). In addition, researchers have linked exposure to a class of pesticides called organophosphates with attention disorders in children. The most significant results have been observed in children who were exposed in the womb and in those who are most genetically susceptible (Park, 2010). One possible explanation that links these different findings is that ADHD may be genetically based, and that exposure to an environmental stressor (such as lead, tobacoo, pesticides) is one trigger than can lead the genes to be expressed as an ADHD phenotype (Mill & Petronis, 2008). However, there have been few studies on this subject and more research is needed in order to determine if a causal relationship exists.

In addition to environmental factors, social factors such as relationships with caregivers are also considered to have a profound effect on attention and self-regulatory abilities. However, exactly how such social factors can cause deficits in behavioral inhibition, executive functioning, and other cognitive deficits commonly associated with a diagnosis of ADHD has not been made clear through research (Barkley, 2006). It is important to view these relationships between environmental and/or social factors and ADHD symptoms with some caution, because research in these areas tends to suffer from methodological limitations. Generally speaking, such research has failed to rely on diagnostic criteria to determine rates of ADHD in sample children, and the presence of ADHD in the parents has not been evaluated and controlled for. Instead, researchers have

relied on parent's ratings of hyperactivity or laboratory observations of distractibility (Johnston & Mash, 2001). As previously discussed, there has been no agreed upon cause of ADHD, and instead, many competing theories exist. More recently, many researchers have focused on the disorder from a neurological perspective and many differences have been observed in the brain functions of children with and without a diagnosis of ADHD (Castellanos, Sonuga-Barke, Milham, & Tannock, 2006).

Cognitive models of ADHD. Cognitive models of ADHD began to evolve after researchers observed many similarities between the cognitive deficits associated with ADHD and those of patients with frontal lobe disorders. These finding directed researchers to focus their attention on higher-order cognitive processes associated with the frontal lobes and their relationship to ADHD (Castelanos, Sonuga-Barke, Milham, & Tannock, 2006). Neuropsychological studies on children with ADHD reveal a pattern of deficits consistent with prefrontal executive functioning deficits. These deficits include inattention, difficulty with self-regulation, response inhibition deficits (impulsivity), and restlessness or hyperactivity. This research suggests that the behaviors observed in children with ADHD are related to a very real brain dysfunction. Furthermore, neuropsychological profiles have revealed differences between the inattentive types of ADHD in comparison with the hyperactive or impulsive dimension. The inattentive dimension has been found to be more highly associated with significant neuropsychological impairment; however, it is still suggested that both dimensions can be related to brain dysfunction. In general, the inattentive symptoms appear to refer more specifically to the cognitive aspects of the disorder, and the hyperactive or impulsive

symptoms relate more specifically to the behavioral aspects of the disorder (Dailey & Rosenberg, 1994).

Many studies have been conducted using Magnetic Resonance Imaging (MRI), which revealed relatively consistent differences in the brains of children with ADHD compared with those of normal controls. In a longitudinal study examining 544 MRI's from children with ADHD and matched controls, it was found that ADHD is associated with an atypical pattern of brain development that appears in early childhood. This study demonstrated that those with ADHD have small but significant reductions in total brain volume (5%), and also in the various regions of the brain that are involved in the regulation of attention and impulsivity (Hallowell & Ratey, 1994). Functional neuroimaging studies have also been used to study individuals with ADHD, revealing a similar pattern of executive dysfunction (Pennington & Oznoff, 1996). Functional neuroimaging studies provide researchers with the unique opportunity of examining the brain while it is performing various cognitive or behavioral tasks. Using this method, it has been revealed that when children are asked to perform a task that places demands on the frontal executive system, those with ADHD have atypical patterns of activation (Pennington & Oznoff, 1996). In order to demonstrate these atypical patterns, researches have used tasks such as "go/no-go", during which children had to establish a pattern of response to a specific "go" signal and then inhibit the response when a "no-go" signal was presented. In general, the functional MRI's demonstrated that children with ADHD do not activate frontostraital networks to the same extent as that seen in children without ADHD. Instead, their activation pattern is more disperse, suggesting that the development

of the frontal executive system was delayed in children with ADHD. (Pennington & Ozonoff, 1996).

In addition to the MRI and functional neuroimaging studies, electroencephalographic (EEG) studies of children with and without ADHD have also revealed significant brain differences. EEG studies have demonstrated an excess of slow-wave (theta) activity in children with ADHD, which is consistent with decreased alertness and underarousal. These patterns suggest that there are reduced cortical differentiation and specialization in the brains of children with ADHD, more prominently observed in children with the hyperactive or impulsive type. Children with the inattentive type were found to have two different EEG patterns, one consistent with hypoarousal, and one consistent with a maturational delay. Overall, EEG studies have demonstrated atypical brain wave patterns in children with ADHD, which suggests dysregulation of arousal and attention (Clarke, Barry, McCarthy, & Selikowitz, 1998). In general, the neuropsychological studies that have investigated the brain differences among children with ADHD, suggest that the behaviors seen in these children are not simply the result of environmental factors, but rather are the result of a true brain dysfunction (Pennington & Ozonoff, 1996).

Barkley's theory of ADHD. Dr. Russell Barkley (1997), a leading expert on ADHD, has proposed a unifying theory of the disorder. He argues that the core impairment in those diagnosed with ADHD is response inhibition because of abnormalities in the prefrontal cortex and connections to other brain regions. He states that problems with attention are a secondary characteristic of the disorder. Barkley (1997) views inattention as a consequence of the impairment created by poor behavioral

inhibition. Generally speaking, Barkley has defined behavioral inhibition as the ability to delay self-directed actions, thereby allowing for the eventual execution of goal-directed behaviors that are generated from those self-directed actions. Behavioral inhibition refers to three interrelated processes: inhibiting a prepotent response (a response with which immediate reinforcement has previously been associated), delaying an ineffective response, and shutting out external or internal stimuli to allow focus on a specific behavior or thought (interference control). All three inhibitory activities are seen as impaired in children with ADHD (Barkley, 1997).

Barkley (1997) proposes that the primary deficit in behavioral inhibition leads to secondary impairments in the four neuropsychological abilities that partially depend on inhibition for their optimal execution. These abilities are considered executive functions of the brain and they include: working memory, self-regulation of affect-motivation-arousal, internalization of speech, and reconstitution. Generally speaking, executive functions are internal or cognitive, self-directed actions that contribute to self-regulation and underlie self-control and goal-directed behaviors. Individuals with ADHD have problems using internally represented information in order to control their behavior. As a consequence, their behavior is controlled by the immediate context and its consequences. In comparison, the behavior of those without ADHD is more often controlled by information represented internally (Barkley, 1997).

The first executive function is working memory, which has been acknowledged as one of the biggest impairments in children with ADHD. The working memory is a system of interacting cognitive components that allow for the storage and mental manipulation of information over brief periods of time. Individuals with ADHD exhibit substantial

working memory deficits, particularly in visual-spatial tasks. However, performance on short-term memory tasks, such as the recall of digits and words, tends to be within the normal range. A meta-analysis focused on working memory detected the most significant effects when spatial working memory manipulation was distinguished from simple storage (Martinussen, Hayden, Hogg-Johnson, & Tannock, 2005). The manipulation of spatial working memory appears to offer the strongest evidence for impairment in children with ADHD. It appears that when more difficult and complex information must be held in the mind, especially over time, deficits become more evident (Seidman, Biederman, Faraone, Millberger, Norman, Seiverd, Benedict, Guite, Mick, Kiely, 1995). In addition, when organizational strategies are needed to remember information more effectively, those with ADHD were not able to perform as well as controls (Shapiro, Hughes, August, Bloomquist, 1993).

Self-regulation of affect-motivation-arousal is the second executive function negatively affected by a deficit in behavioral inhibition. It has been found that the development of inhibition is essential for developing self-regulation of emotions and motivation (Garber & Dodge, 1991). Research conducted with neurologically injured patients has generated a large amount of evidence in support of the connection between inhibition and the regulation of emotion. It has been demonstrated that emotional disorders are most common in individuals with damage to their prefrontal cortex. This suggests that this region of the brain is not only critical for inhibition, but also for the self-control of emotion (Rolls, Hornak, Wade, & McGrath, 1994). Children with ADHD have often been described as irritable, hostile, and excitable, and these characteristics are likely related to deficits associated with the prefrontal cortex. Children diagnosed with

the disorder also tend to be more emotionally reactive, and this lack of emotional control often creates further problems, such as more negative and emotional communication with others (Barkley, 1997). In addition to impaired emotional control, individuals with ADHD tend to show less motivational effort in the performance of goal-directed behaviors. However, this tends to be the case only when repetitive tasks are performed, with little or no reinforcement. As previously mentioned, children with ADHD are more successfully controlled by immediate external sources of reward; when no reinforcement is available they have a diminished capacity for self-regulation of motivation (Barkley, 1997).

The internalization of speech refers to one's ability to use internally generated speech to guides one's behavior; this third executive function is impaired by a deficit in behavioral inhibition. Throughout a child's development, speech becomes progressively more internal, and behavior becomes increasingly under its control. Self-directed speech enables individuals to create internal rules for governing behaviors (Barkley, 1997). Empirical evidence suggests that this is a capacity that develops later and less completely in individuals with ADHD (Kochanska, DeVet, Goldman, Murray, & Putnam, 1994). Studies suggest that children with ADHD are less compliant with directions; they appear less able to restrict their behavior when given instructions to do so (Danforth, Barkley, & Stokes, 1991). This deficit also appears to contribute to poor problem solving and to delays in moral development (Barkley, 1998).

The internalization of language brings with it reconstitution, the fourth consequence of behavioral inhibition. Reconstitution represents one's ability to take a part of a behavior sequence and recombine the units in order to create a novel behavior,

also referred to as behavioral analysis/synthesis. This process is reflected in tasks that require the accurate and efficient communication of information, but children with ADHD appear to have a deficit in this area of verbal fluency. These children appear to lack the ability to access and reconstitute parts of speech readily into messages for others (Barkley, 1998). Studies of complex language fluency and organization have demonstrated that children diagnosed with ADHD produce less speech in response to questioning, are less able to use verbal problem solving skills, and are less capable of communicating essential information to peers during cooperative tasks (Douglas, 1983; Whalen, Henker, Collins, McAuliffe, & Vaux, 1979).

Barkley's comprehensive theory of ADHD, sighting deficient inhibitory control as the core deficit that secondarily disrupts other executive functioning processes, has become the dominant paradigm over the past decade (Castellanos, Sonuga-Barke, Milham, & Tannock, 2006). A large amount of support for Barkley's theory has been generated from various sources. Studies have demonstrated that children with ADHD, compared with controls, exhibit significant impairment in inhibition, particularly in situations in which rewards were used for emitting impulsive responses. For instance, children with ADHD have more difficulties in restricting their behavior when instructed to do so, in deferring gratification, and in resisting temptation (Ullman, Barkley, & Brown, 1978; Campbell, Pierce, March, Ewing, & Szumowski, 1994). Further evidence of impairment in inhibition comes from studies using motor inhibition tasks, such as go/no-go paradigms, the stop-signal task, the change paradigm, and delayed response tasks. These tasks have helped demonstrate that children with ADHD have significantly longer reaction times, less inhibition of the primary response, and more variation in their

inhibition of the primary response (Lijffift, Kenemans, Verbaten, & VanEngeland, 2005). Empirical studies have also demonstrated evidence for poor interference control in those with ADHD. For instance, many studies have used the Stroop Color-Word Interference Test for children with ADHD, and almost all of them have found these children to perform less well, when compared with controls. On this test there are names of colors written; these differ from the ink color that is used, but the child must say the name of the ink color, not the written word. Children with ADHD have slower reaction times and make more errors on this task than control children (Barkley, Grodzinsky, DuPaul, 1992). Overall, the evidence that ADHD involves impaired behavioral inhibition is convincing, because it comes from multiple studies, methods, and sources (Barkley, 1997).

It is important to mention that Barkley's theory applies only to those individuals diagnosed with the combined-type or the hyperactive-impulsive type of ADHD. He has argued that ADHD combined type and ADHD inattentive type may be two qualitatively different disorders, and his theory was aimed at addressing this distinction. Research has suggested that individuals with the predominantly inattentive subtype of the disorder tend to show deficits in the speed of information processing and in focused or selective inattention (Goodyear & Hynd, 1992; Lahey & Carlson, 1992). These deficits are not related to problems with behavioral inhibition and self-regulation. In comparison, individuals diagnosed with the combined type of ADHD appear to have deficits in the area of sustained attention and distractibility. Poor sustained attention represents impairment in goal directed persistence, arising from poor inhibition and the effect that it has on self-regulation. Deficits related to distractibility likely stem from poor interference control, which allows other internal and external events to disrupt the executive functions

that are needed for self-control and persistence. Generally speaking, the problems with inattention associated with hyperactive-impulsive behavior do not fall into the realm of attention (Barkley, 1997). Because the term ADHD has been used throughout the description of his theory, it is essential to note that he is referring only to the subgroup of the population diagnosed with the combined type of the disorder.

Barkley's theory makes an important distinction between skills deficits and performance deficits (Barkley, 1997). Speculations about the presence and impact of these two types of deficits on the functioning and task performance of children with ADHD are long-standing. The skills deficit model assumes that impaired functioning in a particular domain is based on a lack of specific skills and relevant knowledge needed to function effectively. In essence, individuals with a skills deficit do not engage in effective behaviors because they have not learned how to do so. The performance deficit model presumes that individuals have the requisite knowledge and skills, but fail to use them when called for. Failure to do so can stem from a variety of reasons, including insufficient motivation, lack of carry through, task avoidance, and/or uncertainty about where and when these behaviors are required (Gumpel, 2007). Barkley (1997) describes ADHD as a performance disorder rather than a skill disorder. He proposes that children with ADHD may not lack the skills and knowledge necessary for planning, regulating behavior, or sustaining attention; rather, they have difficulty at the point of performing these behaviors. As a result, Barkley recommends that interventions take place at this point of performance. As previously discussed, children with ADHD have difficulty planning for the future, and this can cause them to have trouble relating consequences to actions. Parents and teachers can help children with ADHD manage their disorder by

providing them with motivation and consequences in the immediate present, or at the point of performance (Barkley, 1997).

Although much of the research on neuropsychological models of ADHD has been focused on cognitive deficits, there has been an increasing amount of research examining the impact of motivational factors on ADHD. Researchers who have examined ADHD from this perspective have highlighted the importance of immediate reinforcement at the point of performance (Sagvolden, Johansen, Aase, & Russell, 2005). Research has demonstrated that children with ADHD show evidence of delay aversion. This aversion to delay appears to stem from negative affective states that manifest in feelings of frustration and emotional arousal when delay is imposed. Such findings further emphasize the need to utilize interventions that take place at the point of performance in order to effectively help children with ADHD (Castellanos, Sonuga-Barke, Milham, & Tannock, 2006).

Functional impairments and ADHD. The inattentive, hyperactive, and impulsive symptoms associated with ADHD often lead to marked impairment in key areas of functioning that are essential for optimal development in children. Such functional impairments frequently co-occur with the disorder, and they tend to complicate the typical problems associated with the diagnosis. Researchers have found that impairment in functioning is typically the main reason for referral to treatment, rather than the ADHD symptoms themselves (Pelham, Fabiano, & Massetti, 2005). The most common areas of impairment include: academic achievement, peer status and social skills, and family relationships (Evans, Timmins, Sibley, White, Serpell, & Schultz, 2006).

The increase in the number of children diagnosed with ADHD over the past few years has seriously impacted the educational system. ADHD is not only a public health concern, but also a relevant educational issue. The symptoms of ADHD tend to cause problems in school functioning, and the chronic nature of the disorder can carry with it poor long-term academic adjustment (Biederman, Monuteaux, Doyle, Seidman, Willens, Ferero, Morgan, & Faraone, 2004). Children with ADHD tend to show significant academic underachievement, poor academic performance, and general educational problems. Research has suggested that 50-80% of students with ADHD fall behind academically, and as a result, they often fail to acquire the necessary skills across academic subjects. Furthermore, the co-occurrence of ADHD and learning disorders ranges from 11-30% (Leslie, Lambros, Aarons, Haine, & Hough, 2008). Students diagnosed with ADHD are also three to seven times more likely than other children to receive special education services, to be expelled, suspended, or to repeat a grade (LeFever, Villers, & Morrow, 2002).

ADHD is most commonly viewed as a disorder of self-regulation. Students with ADHD often fail at learning tasks that require adequate levels of attention, inhibition, and active involvement, all of which are components of the self-regulation system (Barkley, 1997). They tend to pay attention to what is stimulating or novel and have greater difficulty focusing on important information. During prolonged tasks, or situations of decreasing novelty, these students are unable to sustain their attention. In addition, many tasks in school require children to be able to delay their behavior, for instance, raising their hand to answer questions, reading or listening to directions, asking questions to clarify information, and planning and organizing. Such tasks represent a significant

challenge for children with ADHD (Zentall, 1993). Students with ADHD appear less motivated to succeed in school, compared with students without ADHD. They spend less time studying and put forth less effort towards schoolwork (O'Neill & Douglas, 1991). The academic performance of students with ADHD is also negatively affected by the disruptive behaviors that they tend to manifest in the classroom. These children often create serious barriers to the teaching and learning process by exhibiting behaviors such as getting out of their seats, interrupting the teacher during explanations, making inappropriate noises, and fidgeting (Miranda, Jarque, & Tarraga, 2006).

In addition to the previously discussed challenges, students with ADHD often fail at tasks in school that require organizational capabilities. This is due to an ineffective use of higher order processes, such as working memory (Schachar, Chen, & Logan, 2004). An effective working memory is essential to concentration and success in school, and it has been demonstrated that many children with ADHD have deficits in this area. Children with the disorder tend to have difficulty retaining information in their working memory because of inattentiveness or impairment in inhibiting environmental interference. This impairment makes it hard for them to encode newly learned information fully, leading to learning problems in school (Martinussen, Hayden, Hogg-Johnson, & Tannock, 2005).

The symptoms of ADHD not only cause a disruption in school functioning, but they also cause problems in peer relationships. Peer relationships function as a critical component in a child's development, and given this importance, social impairment is one of the most difficult problems that a child with ADHD encounters (Miranda, Jarque, & Tarraga, 2006). Both boys and girls with ADHD show impairments in their social functioning. They tend to exhibit negative, disruptive behavior, and a lack of social skills,

causing them to be more often rejected by their peer groups. Specifically, these children are often rejected because of verbal and physical bossy and aggressive behavior, inattention, violating rules, and academic difficulties (Mrug, Hoza, Gerdes, Hinshaw, Arnold, Hechtman, & Pelham, 2008). Children with ADHD appear limited in their ability to take advantage of subtle and indirect cues from others, which help children know when to modify social behavior. This may be due to the fact that children with ADHD have a poor memory for context, which is an important part of assessing what an appropriate response might be in a given situation (Bjorne & Balkenius, 2005). Children with ADHD also show impairments in their ability to perceive their success accurately when interacting with peers. In an experimental manipulation of success and failure, boys with ADHD were less socially effective than control boys. However, they rated their own performance as more successful, even following blatant failure (Hoza, Waschbusch, Pelham, Molina, & Milich, 2000).

In general, research has demonstrated that children with ADHD are less socially preferred, have higher social impact, have fewer dyadic friends, and more often fall into the rejected social status category according to peer sociometric measures (Hoza, Gerdes, Mrug, Hinshaw, Bukowski, Gold, Arnold, Abikoff, Conners, Elliott, Greenhill, Hechtman, Jensen, Kraemer, March, Newcorn, Severe, Swanson, Vitiello, Wells, & Wigal, 2005). The social deficits apparent in children with ADHD tend to persist over time and are predictive of future maladjustment such as affiliation with defiant peer groups and the development of conduct disorder and substance abuse disorders (Mrug, Hoza, Gerdes, Hinshaw, Arnold, Hechtman, & Pelham, 2008). Problems in peer relationships appear to be better predictors of long term outcomes for children with

ADHD, compared with the core symptoms of ADHD themselves (Pelham, Fabiano, & Massetti, 2005).

Diverse forms of social impairment have been observed among the different subtypes of ADHD. Growing evidence suggests that children with the inattentive subtype display passive and withdrawn behaviors around peers, which may lead to social neglect as opposed to rejection (Landau, Milich, & Deiner, 1998; Wheeler & Carlson, 1994). Furthermore, in a study which assessed social skills using a novel computerized chat room task, children with the inattentive subtype made fewer responses overall and showed a poor memory for the conversation. In comparison, children with the combined subtype made more off-topic and hostile responses. Teachers have also detected differences between the subtypes, reporting that children with the combined subtype were highest in negative nominations from peers; children with the inattentive subtype were in the middle, and comparison children had the least. There were no significant differences between the subtypes in parent ratings of social skills, but parents of children with both subtypes of ADHD rated their children significantly lower in social skills than did parents of comparison children (Mikami, Huang-Pollock, Pfiffner, McBurnett, & Hangai, 2007).

Along with a disruption in school functioning and problems with peer relationships, the common behaviors that characterize ADHD often contribute to impairment in the parent-child relationship. An increased level of stress is reported among parents of children with the disorder, and this is often related to difficulty in managing their children's behavior (Chronis, Jones, & Raggi, 2006). Problems related to the parent-child relationship appear to stem from two sources. The first is that parents of children with ADHD tend to develop maladaptive parenting practices to deal with their

child's behavioral problems. In turn, these strategies serve to perpetuate and maintain the behavioral difficulties. For instance, symptoms of ADHD, such as over-activity, inattention, and impulsivity often prevent a child from finishing assigned activities, thereby causing him or her to be more likely to elicit increased commands, supervision, and negative reactions from parents. Children with ADHD are more likely to respond to these parental confrontations with negative emotional reactions. If such reactions result in the child escaping further demands, the use of these reactions during subsequent commands will be increased and sustained (Barkley, 1997). The second source of parent-child conflict is the increase in oppositional behaviors seen in children with ADHD (Chronis, Jones, & Raggi, 2006). These children are less compliant with directions and commands given by their mothers than those children without ADHD (Danforth, Barkley, & Stokes, 1991). The oppositional behaviors displayed by children with ADHD are often a result of the combination of a deficit in behavioral inhibition, and the use of maladaptive coping strategies to deal with the frustration and emotional distress associated with having ADHD (Barkley, 1997). No matter the source of the conflict, it is necessary for any problems surrounding the parent-child relationship to be addressed early on, because they can increase the child's risk for developing multiple childhood disorders (Burt, Krueger, McGue, & Iacono, 2003).

ADHD and comorbidity. There has been an increasing awareness that many individuals with ADHD also meet the diagnostic criteria for other psychiatric diagnoses. In general, between 60-80% of children with ADHD will meet the criteria for one or more comorbid conditions at some point in their lives (Biederman, Faraone, Milberger, Guite, Mick, Chen, Mennin, Marrs, Ouellette, Moore, Spencer, Norman, Wilens, Kraus,

& Perrin, 1996). According to the Multimodal Treatment Study of Children with ADHD (MTA, 1999a), Oppositional Defiant Disorder is one of the most common comorbid conditions, because it is present in nearly one half of children diagnosed with ADHD. Other common comorbid conditions include: Anxiety, Depression, Bipolar Disorder, Conduct Disorder, Obsessive-Compulsive Disorder, Tic Disorder, Enuresis, Sensory Integration Disorder, Learning Disorder, early speech and communication problems, and sleep problems. These comorbid disorders tend to complicate the typical problems associated with the symptoms of ADHD (Biederman et al., 1996). When designing treatment approaches for children with ADHD, it must be taken into consideration that comorbitiy is the rule, rather than the exception.

Effective interventions for ADHD. As previously mentioned, heterogeneity is prominent in children with ADHD. Each individual differs in his or her functional impairments and/or comorbid conditions, making it necessary to tailor treatment to each individual. Ideally, clinicians utilize the science-practitioner model, in which they rely on empirical evidence to make informed decisions regarding the best-suited treatment for each individual. It is possible to make such informed decisions because a variety of valid treatment options for children with ADHD have been established. Researchers have emphasized that effective treatment for ADHD depends on the match between treatments and the children's assessed needs (Abikoff, 2001).

Stimulant medication. Methylphenidate (MPH), a psychostimulant drug, is the most commonly researched treatment for ADHD (Evans, et al., 2006). More evidence has been generated regarding the treatment effects of stimulant medication as a pharmacological treatment for ADHD than there has been for any other child psychiatric

disorder. It is estimated that approximately 85% of children diagnosed with ADHD are treated with stimulant medication (Olfson, Gemeroff, Marcus, & Jensen, 2003). Stimulant medications have been shown to have large, beneficial effects on a number of outcome measures. In the school setting, stimulants have been found to decrease disruptive behavior and to increase on-task behavior, compliance, and academic productivity. In addition, stimulants have been shown to decrease negative social behavior such as: aggression, inappropriate peer interactions, and negative parent-child interactions (Swanson, McBurnett, Christian, & Wigal, 1995). Although stimulant medications have demonstrated the production of positive outcomes, they have often been the result of a combined treatment approach, as opposed to medication treatment alone (Daly, Creed, Xanthopoulos, & Brown, 2007).

The Multimodal Treatment Study of Children with ADHD (MTA) is the largest and most comprehensive treatment study of ADHD ever conducted. In this study, 579 children (ages 7 to 9.9) diagnosed with the combined subtype of ADHD were randomly assigned to one of four treatment conditions. Fourteen months later, the participants were evaluated so that the impact of the different treatments could be assessed. The four different treatment conditions were: medication management, behavioral treatment, combined treatment, and community care. With regards to medication treatment alone, it was found to be more effective than behavioral treatment alone on both parent and teacher ratings of primary ADHD symptoms. On all other outcome measures, medication management and behavioral treatment did not differ significantly. It was also found that the effects of medication alone did not extend to other important areas of functioning

such as oppositional behavior, peer relationships, and academic achievement (MTA, 1999a).

There are several limitations to an exclusively pharmacological approach to the treatment of ADHD. To begin with, there are several reported adverse effects of stimulant medication including: decreased appetite, headaches, abdominal discomfort, problems falling asleep, irritability, motor tics, nausea, fatigue, and social withdrawal. In most school-aged children, these side effects are mild and short lived; however, in some cases they can be sufficient enough to warrant discontinuation of the medication (Daly, Creed, Xanthopoulos, & Brown, 2007). In addition, evidence suggests that approximately 20-30% of children do not significantly benefit from stimulant medication treatment (Pelham, 2000). Furthermore, although research has shown that stimulant medications can produce short-term gains in academic achievement, there is a lack of evidence regarding any long-term benefits (McCormick, 2003). Studies have failed to demonstrate any convincing evidence that stimulant medications improve basic learning disabilities (Alto & Frankenberger, 1994). Studies have also revealed that stimulant drug therapy can have adverse effects on children's social behavior. Children on stimulant medication have been observed displaying muted social behavior, decreased social engagement, and increased dysphoria, compared with placebo controls (Buhrmester, Camparo, Christensen, Gonzales, & Hinshaw, 1992). A final limitation to stimulant medication treatment alone is that duration of action for most medications is eight hours. After the medication has worn off, parents often have difficulty managing their child's impulsive, oppositional, and disruptive behaviors. Although stimulant drug therapy is the most prevalent treatment option for children with ADHD, there are clear limitations to using

this treatment alone. It is important to utilize other evidence-based treatments as an alternative or in conjunction with medication management to ensure effective treatment of the disorder (Daly, Creed, Xanthopoulos, & Brown, 2007).

Family-based interventions. The core symptoms and impairments commonly observed in children with ADHD often contribute to problems in the parent-child relationship, as previously discussed. Parents of children with the disorder tend to develop maladaptive parenting strategies that serve to maintain and/or exacerbate existing behavioral problems. Because poor parenting is a major predictor of negative long-term outcomes in children with behavioral problems, behavioral parent training can be an effective way to change parenting and, in turn, treat ADHD (Daly, Creed, Xanthopoulos, & Brown, 2007). Based on social learning principles, behavioral parent training teaches the child socially appropriate behavior by training primary caregivers in behavior management strategies. These strategies emphasize behavior modification, discipline, and consequences/reward systems. Caregivers learn to identify and manipulate the events leading up to and following the child's behavior. In addition, they learn how to target and monitor problem behaviors, reward positive behavior, and decrease negative unwanted behaviors. Overall, the goal is to reduce any unintentional positive reinforcement being provided for disruptive behavior, and at the same time, increasing the positive reinforcement provided for appropriate behavior (Chronis, Chacko, Famiano, Wymbs, & Pelham, 2004).

For many years, behavioral parent training has been successful in treating children with ADHD. The efficacy of this treatment has been evaluated in a breadth of published studies, and overall, they have demonstrated that parent training results in improvements

for children with ADHD in many areas. The most remarkable results have come from parent ratings of problem behavior and observations of parent-child conflict (Chronis, Jones, & Raggi, 2006). In a meta-analysis of parent training programs, it was further demonstrated that children's ADHD symptoms improved as a result of treatment. It has also been established that parenting skills, as well as parents' sense of competence, was increased after training, and reductions in family distress were also observed (Lundah., Risser, & Lovejoy, 2006). Along with ADHD, parent training has been found to be effective in treating other childhood mental health disorders such as oppositional defiant disorder, conduct disorder, as well as many internalizing disorders. This is important to note, because of the extremely high incidence of comorbidity with ADHD (Daly, Creed, Xanthopoulos, & Brown, 2007).

Although many studies that have found parent training to be an effective treatment, it is important to keep in mind that not all of the results can be generalized. Individual and family factors determine some variability about which children will improve from behavioral interventions. Researchers have identified several mediators and moderators that affect ADHD treatment; these include: age, race, ethnicity, socioeconomic status, social supports, family make-up, the presence of a comorbid disorder, parental pathology, and parental cognitions regarding children and treatments (Chronis et al., 2004; Lundahl et al., 2006). More research is necessary in order to clarify the generalizabilty of parent training for children with ADHD (Daly, Creed, Xanthopoulos, & Brown, 2007).

School-based services. The primary symptoms of ADHD often interfere with a child's ability to perform successfully in the school setting (Daly, Creed, Xanthopoulos,

& Brown, 2007). In order to prevent the occurrence of negative outcomes among these children, schools must take responsibility for improving the identification, assessment, and delivery of effective interventions for children with ADHD. Due to the amount of time children spend in school, the school environment is an optimal setting in which children's mental health problems can be prevented, identified, and/or treated (CSG, 2007). School-based services have been found to be especially well suited for children with ADHD because of the high levels of school dysfunction they exhibit (Daly, Creed, Xanthopoulos, & Brown, 2007). Empirical studies on school-based services for children with ADHD have supported the efficacy of two main approaches: behavioral and academic interventions (Chronis, Jones, & Raggi, 2006).

Similar to parent training, behavioral classroom interventions involve consultation with the child's teacher regarding ADHD in general, the identification of target behaviors, and the use of appropriate behavior modification strategies. Based on a functional analysis of a child's problem behaviors, teachers are instructed on specific behavioral techniques to be used in the classroom setting (Chronis, Jones, & Raggi, 2006). As previously mentioned, classroom behavioral interventions can be broken down into three different categories: Antecedent-based strategies, consequent-based strategies, and self-management strategies. Antecedent-based strategies are interventions that manipulate the events that come before the target behavior in an attempt to prevent the behavior from occurring. Such interventions include increased choice-making for students, reduction in the size of assigned tasks, and the active teaching of classroom rules. Consequent-based strategies are interventions that manipulate the events that come after the target behavior, in an effort either to decrease the probability of negative

behaviors occurring again in the future, or to increase the probability that positive behaviors will recur (DuPaul & Weyandt, 2006). Token reinforcement is one of the most commonly used consequent-based strategies in which students can earn immediate reinforces (stickers, points) for meeting behavioral expectations. The stickers or points can later be exchanged for back-up reinforcers (e.g., a game or preferred activity) (Chronis, Jones, & Raggi, 2006). Based on the notion that ADHD is associated with a deficit in response inhibition, immediate reinforcement is necessary to change behavior effectively (Barkley, 1997). As an example, the Daily Report Card (DRC) is an empirically supported intervention in which behavioral goals are set and are monitored for the child in school, and based on the attainment of these goals, the child can earn back-up reinforcers at home. The effectiveness of the DRC has been reported in several multi-component interventions (Chronis, Jones, & Raggi, 2006). Last, self-management strategies are interventions implemented by the student in an effort to increase self-control of behavior. These strategies include self-monitoring, self-evaluation, and self-reinforcement. It many cases, these strategies are effective only for those children with mild ADHD symptoms; however, they can also be utilized after a child has been eased away from the use of externally based programs (DuPaul & Stoner, 2003).

Behaviorally based classroom interventions for children with ADHD have been used for many years, and research has demonstrated that such interventions qualify as an empirically supported treatment for the disorder. The implementation of specific behavioral interventions in the classroom setting has been shown to produce large improvements in children's on-task behaviors (Evan et al., 2006). In a meta-analysis, DuPaul & Eckert (1997) found that behavioral classroom interventions demonstrated a

significant effect on multiple treatment outcome measures, with effect sizes in the moderate to large range. However, more significant effects were observed on measures of children's behavior, compared with measures of academic performance. In general, behavioral management strategies utilized in the classroom have been found to be more effective than traditional outpatient treatment for children with ADHD (Pelham, Wheeler, & Chronis, 1998). Furthermore, when classroom behavior management strategies are used in conjunction with stimulant medication, an even stronger treatment effect has been observed (Chronis et al., 2004). It is important to note that the effectiveness of classroom behavior management as a treatment for children with ADHD is heavily dependent on the collaboration between behavior specialists and school personnel (Daly, Creed, Xanthopoulos, & Brown, 2007).

Although behaviorally-based classroom interventions utilize different strategies to target task completion and disruptive behaviors, academic interventions for children with ADHD focus more strictly on changing antecedent conditions, such as instruction and materials, in an effort to improve both behavioral and academic outcomes (DuPaul & Weyandt, 2006). Because of the high rate of co-occurring learning problems and academic underachievement in children with ADHD, the direct targeting of academic impairment is an essential component for the treatment of the disorder. A number of academic approaches have been developed in order to support children with ADHD; these include: task and instructional modifications, peer tutoring, computer-assisted instruction, and strategy training (Chronis, Creed, Xanthopoulos, & Brown, 2007).

Task and instructional modifications include strategies such as increased choice-making, reductions in task length, increased stimulation of the task, and modification of

instructions based on the student's learning style, all of which are characteristics known to enhance the sustained attention of children with ADHD (Evans et al., 2006). Peer tutoring is an example of an instructional intervention in which two students work together on an assignment at their own pace, and provide each other with assistance and frequent, immediate feedback. Class-Wide Peer Tutoring (CWPT) is one of the most widely researched peer tutoring models. The effects of this program on academic performance and behavioral control have been evaluated in a number of controlled studies. Results indicate that students with ADHD increased their active engagement from an average of 21.6% to 82.3% when CWPT was implemented (DuPaul, Ervin, Hook, & McGoey, 1998). Computer-Assisted Instruction (CAI) is another intervention that has been used to provide a stimulating instruction format, allowing students with ADHD to focus their attention more easily. CAI provides immediate feedback and reinforcement, as well as opportunities to respond actively to the instruction, all of which are shown to enhance the academic performance of children with ADHD. Few controlled studies have been conducted to examine the effectiveness of CAI; however, preliminary results have indicated that it can increase academic performance and prevent off task behavior during academic activities (Evans et al., 2006). In addition to interventions such as CWPT and CAI, strategy training has also been used to provide specific instruction geared towards helping students with ADHD meet the requirements of a specific academic situation. For example, students are taught note taking and homework completion strategies, study skills, and self-reinforcement procedures. Strategy training has demonstrated some positive results; however, no strong conclusions about its effectiveness or generalization have been made (Daly, Creed, Xanthopoulos, & Brown,

2007). In general, academic interventions are direct, time efficient, and have the ability to target academic difficulties comprehensively, making them extremely useful in a school setting.

Behaviorally based classroom interventions are considered to be an empirically supported treatment for children with ADHD. Such behavioral interventions have been widely investigated in a number of controlled studies, and have shown to have a significant effect on task engagement, disruptive behavior, and on parent and teacher ratings of problem behaviors. In contrast, relatively few studies have examined the effectiveness of the academic interventions described. Although preliminary support for their efficacy exists, they do not meet the criteria for an empirically supported treatment (Chronis, Jones, & Raggi, 2006). The primary focus of treatment studies related to ADHD has been on the reduction of disruptive behaviors. Researchers must continue to expand their focus, because children with ADHD suffer from deficits across multiple areas of functioning (DuPaul & Weyandt, 2006). Because of the high prevalence of ADHD within the school age population, there is a pressing need for greater outcome research regarding effective school-based interventions.

Peer interventions. Most psychological interventions for childhood peer problems are based on the social skills deficit model of peer rejection, which attributes peer rejection to a lack of social skills knowledge or performance deficits. It has been proposed that teaching social skills to the poorly accepted child will result in a reduction of peer problems. Such programs have had mixed results for non-clinical and school-based samples of children with externalizing symptoms. Better results have been observed when social skills' training has been paired with behavioral programs that target

negative behaviors and reinforce the use of positive social skills. However, these gains rarely generalize beyond the treatment setting (Hoza et al., 2005). Social skills-based treatments, when used alone, have not been effective in treating children with ADHD. Empirical evidence gathered from a sample of children clinically diagnosed with ADHD suggests that the addition of an intensive social skills-based treatment fails to increase treatment effectiveness significantly more than the effect of stimulant medication treatment alone, on multiple measures of social functioning (Abikoff, Hechtman, Klein, Gallagher, Fleiss, Etcovitch, Cousins, Greenfield, Martin, & Pollack, 2004). This has led researchers to conclude that there is limited support for clinic-based social skills training as a part of long-term psychosocial interventions to improve social behavior in young children (ages 7 to 9) with ADHD (Abikoff et al., 2004).

Although socials skills training alone has not been able to produce significant effects on children's social behavior, there is evidence that when social skills training is combined with behavioral management, parent training, and problem solving skills training, children's social behavior does improve (Pelham et al., 2005). An intensive, 8-week Summer Treatment Program for children with ADHD (STP) was designed by researchers; this program incorporated all of the just mentioned evidence-based treatment components, along with social skills training. The goal was to implement all of the treatments across different recreational and academic settings in an effort to improve children's peer relationships, interactions with adults, academic performance, and self-efficacy (Pelham & Hoza, 1996). Studies conducted on STP have demonstrated that this treatment package produced statistically significant reductions in ADHD symptoms and related impairments across multiple domains (Pelham, Gnagy, Greiner, Hoza, Hinshaw,

Swanson, Simpson, Shapiro, Bukstein, Baron-Myak, & McBurnett, 2000). STP is considered to be an effective intervention, having the ability able to address and improve the social functioning of children with ADHD (Chronis, Jones, & Raggi, 2006).

Combined behavioral-pharmacological interventions. Combined or multimodal interventions are often viewed as the standard for treating children with ADHD (Chronis, Jones, & Raggi, 2006). The MTA (1999a) was the largest study conducted that examined the efficacy of combined treatments for ADHD, and from this research, comprehensive data have been gathered in support of this approach. Although many behavioral interventions and stimulant medication are considered empirically supported treatments for ADHD, there are limitations associated with using either one, as a stand-alone treatment. It has been found that behavioral treatment alone will not normalize the behavior of children with ADHD, compared with their peers. Behavioral treatment strategies must be incorporated into a child's overall treatment to address problems that are not sufficiently helped by medication alone. Along similar lines, even though stimulant medication has been found to be effective in reducing ADHD symptoms, the effects of medication alone do not extend to other important areas of functioning such as oppositional behaviors, social functioning, and academic achievement (MTA, 1999a). Secondary analysis of the MTA data demonstrated that a combined, behavioral-pharmacological intervention was most effective both in normalizing behavior and in improving other areas of functioning that were not helped by medication alone. In addition, a combined treatment approach allowed for lower doses of medication to be used in conjunction with behavioral interventions (Swanson, Kraemer, Hinshaw, Arnold, Conners, Abikoff, Clevenger, Davies, Elliott, Wigal, Wu, Greenhill, Hechtman, Hoza,

Jensen, March, Newcorn, Owens, Pelham, Schiller, Severe, Simpson, Vitiello, & Wells, 2001). Based on existing research and the chronic nature of ADHD, a combined behavioral-pharmacological treatment approach is recommended in order to treat children with the disorder successfully.

ADHD and attachment. Attachment theory is meant to describe and explain people's enduring patterns of relationships from birth to death. The relationship that a child forms with his or her primary caregiver is proposed to have long term effects on his or her development and adult life. Research demonstrates that the quality of care that infants receive affects how they later get along with friends, how well they do in school, and how they react to new and possibly stressful situations (Allen, Kuperminc, & Moore, 1997). Ainsworth (1989) classifies children as "securely attached" or "insecurely attached". Those with secure attachments have caretakers that are available to care for their emotional and psychological needs on a consistent basis. Securely attached individuals characteristically do better in life, develop the capacity for intimacy, are able to trust others, and have higher self-esteem. When a child's caretaker does not respond with comfort, or is not available to them on a consistent basis, an insecure attachment is formed (Ainsworth, 1989).

Attachment theory proposes that the early parent-infant relationship serves as the foundation for the emergence of self-regulation skills. When problems exist within this relationship, and an insecure attachment is formed, these children are more highly at-risk for problems in the areas of affective and behavioral regulation. It is argued that attachment difficulties between parents and infants may play an important role in the development of ADHD. It is suggested that the impairment in self-regulation observed in

children diagnosed with ADHD may be linked to strained parent-infant interactions and disrupted primary attachments. In contrast to the insecurely attached children, those with secure attachments often show an increased attention span, persistence in problem solving situations, greater task-orientation, and greater cognitive control over their impulses. These behaviors are the opposite of those observed in children diagnosed with ADHD, further insinuating a link between children with the disorder and those with insecure attachments (Clarke, Ungerer, & Chahoud, 2002). In addition, both insecurely attached children and those diagnosed with ADHD have been found to have more problems related to interpersonal relationships. The insecure attachment formed with his or her primary caregiver serves as a model for the child's later relationships with adults and peers. Research on children with ADHD has revealed similar deficits in social functioning, offering more evidence that suggests similar developmental outcomes for both groups of children (Clarke et al., 2002). In general, evidence suggests that attachment difficulties represent one of the possible contributing factors to the development of ADHD in children. However, when early antecedents and risk factors such as parent-child conflict are identified and understood, early intervention programs can be effective in reducing the risk of further problems (Stiefel, 1997). Nurture Groups represent a specific example of a school based intervention program that is grounded in attachment theory; in the following section this intervention will be discussed at length.

Nurture Groups

Establishment of nurture groups. Nurture groups were established in 1969 by Marjorie Boxall, an educational psychologist employed by the Inner London Education Authority (ILEA). During this time, the area of East London was in a state of social

disorder. Families were relocated from the slums; individuals from other parts of the UK were moving in, and there was a new multicultural immigrant population. Much of this change was attributed to the consequences of WWII, and the effect that the war had on the population. Relative deprivation and social exclusion were characteristics used to describe the cultural climate in London during this time (Boxall, 2002). Such social conditions had a profound effect on the children in particular. Specifically, the nurturing process normally associated with an individual's earliest years was disrupted for many children. After WWII, many mothers of preschool children and babies had to go to work outside of their homes. This change affected not only the culture in general, but also impacted the attachment relationship between mother and child. In addition, many children had to cope with the loss or separation of family as a result of war (Rygaard, 2006).

Social change has produced distressed communities, which in turn has led to the construction of dysfunctional families who send maladjusted children into stressed schools. The dysfunctions of communities and families can be observed in the overt behavior of children (Thomson, 2002). Due to the social upheaval in London after WWII, schools were overcrowded and under a great deal of stress. A large number of children were entering primary school in Inner London with severe SEBD. These children were readily being excluded from school and referred for psychiatric help. However, after a short time, referrals to special schools for children diagnosed as having SEBD had reached unmanageable levels (Boxall, 2002).

The SEBD observed among these children were understood as the outcome of impoverished early nurturing. It appeared as though these children were lacking an

adequate experience of being loved and attended to, causing an inability in them to form trusting relationships with adults or to respond appropriately to other children (Boxall, 2002). Overall, early parenting practices have been found to influence children's behavior greatly. More specifically, authoritarian parenting practices have been viewed as a key-contributing factor in the creation of maintenance of SEBD among children (Cooper & Tiknaz, 2007). These parents tend to be highly demanding, but not responsive. Their children are expected to obey them and do things in ways they expect; however, no explanations are provided. As a result, these children frequently present with negative externalizing behaviors that are often modeled on such coercive management practices. They may also exhibit negative internalizing behaviors due to being the recipient of such a management style (Cooper & Tiknaz, 2007). The problems associated with impoverished early nurturing make it difficult for these children to meet the social and intellectual demands of the mainstream classroom. The solution to this problem in Inner London was to place these children in nurture groups. The aim was to provide a restorative experience of early nurturing in the child's neighborhood school. The principles underlying the nurture groups were not derived in an attempt to work with existing theories; however, over the years connections have become apparent (Boxall, 2002).

Theories underlying nurture groups. A healthy nurturing process provides the individual with the ability to meet his or her own psychological needs through social interaction. Without this ability, individuals will be unable to understand and regulate their behaviors, form relationships, or communicate effectively with others (Cooper & Whitebread, 2007). The nurturing process is also essential in establishing the social and

psychological foundations for learning, as conceptualized from a socio-cultural learning perspective. The socio-cultural theory of learning is important to the understanding and justification of nurture groups. According to Vygotsky (1978), cognitive strategies in learning can be viewed in terms of the internal representation of an individual's first social interaction. A healthy individual's learning is often guided by a more competent model that provides support to the individual, enabling the learner to use his or her existing knowledge as a means of acquiring new knowledge and understanding (Cooper & McIntyre, 1993). The practical implication of this theory is that the instructional relationship is heavily dependent upon trust and caring (Noddings, 1995). This notion is extended by the invocation of Attachment Theory (Bowlby, 1988).

John Bowlby's attachment theory, now recognized throughout the Western world, proposes that the quality of early experiences is central to a child's development. This quality shapes a child's perception of him/her self and others, thereby influencing behavior (Bowlby, 1988). The psychological characteristics of the children for whom nurture groups were initially created correspond with Bowlby's description of attachment disorders. From an attachment theory perspective, nurture groups can be understood as a learning environment designed for children whose learning difficulties in school are a result of unmet early learning needs (Cooper, & Whitebread, 2007).

Research on nurture groups. After demonstrating the program's success through experimental groups in the 1970s, nurture groups spread through the ILEA. However, these positive outcomes were based solely on anecdotal data from the teachers. Based on the need to assess the children's progress more accurately, The Department of Education and Science (DES) funded statistical work on the Diagnostic Developmental

Profile. This is an assessment instrument that was used at that time, internally; now it has been republished by the Association of Workers for Children with Emotional and Behavioral Difficulties, and titled, *The Boxall Profile*. This instrument was originally developed to help the nurture staff gain a better understanding of their students' difficulties. It provides a framework for the precise assessment of children who are failing in school and helps the staff and teachers to plan focused interventions. It also provides the opportunity to look closely at what was hindering a student's learning, as well as measure change and progress over time (Bennathan & Boxall, 1998).

Overall, there has been limited research conducted on the effectiveness of Nurture Groups. Published studied tend to be retrospective in nature, charting the progress of the students over time, often using the Boxall Profile (Bennathan & Boxall, 1998; Cooper & Whitebread, 2007). One frequently cited study of this kind was conducted by the Educational Psychology Service in London borough of Enfield, where nurture groups began. The participants of this study included all school-aged children in this area who were placed in nurture groups between 1984 and 1988. This study found that 87% of the 308 children were able to return to their regular classroom after less than one year in nurture groups. The same group of children was re-examined in 1995, and at this time 83% of the children were still in the mainstream classroom; only 4% required additional educational support. Included in this study was a non-matched group of 20 mainstream students who had been acknowledged as requiring a nurture group placemen; however, no placement was ever found. Many more difficulties were found within this group; 35% were placed in special schools, and only 55% were able to cope in the mainstream classroom without additional support (Iszatt & Wasilewska, 1997). Although this study

demonstrated positive outcomes for children placed in nurture groups, it is difficult to interpret the significance of the differences between the two groups due to the lack of adequate matching measures (Cooper & Whitebread, 2007).

More recently, a retrospective study was conducted with 179 children between the ages of 5 and 7 years. All of the participants attended schools in Glasgow, and they had all been identified as having SEBD. About half of the participants were attending nurture groups in 16 schools, and the other half was attending 16 schools without nurture groups. The results indicated that the children placed in nurture groups made significant improvements in self-esteem, self-image, emotional maturity, and attainment in literacy, compared with those students not in nurture groups (Reynolds & Kearney, 2007). Another retrospective study assessed the progress of 68 five year-olds placed in three nurture groups for an average of 3.1 terms. Using data from the Boxall Profile, researchers found statistically significant improvements related to cognitive and emotional development, social engagement, and behaviors, indicative of a secure attachment among these children (O'Connor & Colwell, 2002).

As previously mentioned there has been limited research conducted on the effectiveness of nurture groups, and the majority of the studies that have been done are retrospective in nature. Although such studies have demonstrated positive outcomes for children enrolled in nurture groups, because of their design, it is difficult to establish cause and effect. It remains unclear whether or not the participants showed improvements based solely on participation in nurture groups. With retrospective studies, it is difficult to control for biases and confounds that can influence the results. In addition, in such studies there is no randomization of the participants. Because of the limitations associated

with retrospective studies in general, the results from the previously discussed studies should be interpreted with caution; they do not demonstrate cause and effect and should be used only to generate more hypotheses regarding nurture groups. It is necessary for researchers to conduct more experimental research utilizing control groups and randomization of participants in order to demonstrate the actual effectiveness of nurture groups (Hess, 2004).

In addition to being retrospective in nature, the majority of the research examining nurture groups has been on a small-scale, examining only a small number of schools. More recently, a national research study was designed to measure the effectiveness of nurture groups on a larger scale throughout England. This was a longitudinal study, taking place over two years. Over the course of the two years, researchers documented the progress of 546 students (mean age: 6 years, 5 months) from 34 schools with nurture groups. These schools varied in size, and included rural, urban, unitary, and metropolitan types. However, all of the schools served areas of relatively high deprivation and low educational attainment. This study was designed to compare students who attended nurture groups with those who did not. The first group was made up of 359 nurture group students; 71.5% of them were male, with an average age of 6 years and 5 months. The comparison group consisted of 187 students who were matched with a random sample of nurture group students. The results of this study were very positive, demonstrating statistically significant results for the nurture group students. Overall, their social, emotional, and behavioral functioning was shown to improve significantly (Cooper & Tiknaz, 2007). This study helped to confirm the findings of other, retrospective studies. In addition, an unexpected finding within this study

demonstrated that nurture groups were not only successful at sustaining children in the mainstream classroom, but they also made a positive impact on other students and teachers in the school. Both quantitative and qualitative data suggest that the presence of an effective nurture group adds value to the work that schools do with the wider population of children with SEBD (Cooper & Whitebread, 2007).

The positive results from the national research study are convincing; however, it is difficult to determine whether or not they can be generalized to children outside of England. Nurture groups have spread internationally, yet all of the research evidence demonstrating their success has come from Europe. In addition, this study and the others discussed previously, fail to provide specific information regarding the types of SEBD found among the participants. Although nurture groups were created for children with attachment difficulties, the different psychological disorders presented by the participants that stem from such difficulties have not been cited in research. It remains unclear which clinical populations are best suited to nurture groups. Experimental research examining the effectiveness of nurture groups, for various clinical populations, must be conducted internationally in order to determine if the results from the previously mentioned studies can be generalized.

Classic nurture groups. Children with SEBD are initially identified through structured observation and discussion. The nurture group referral process begins when concerns are expressed about a particular student by members of the school staff or his/her parents. All available information and records concerning the student are then reviewed and integrated with his/her classroom teacher's observations. The classroom teacher is then asked to complete the Boxall Profile, giving an initial assessment of the

nature and extent of the child's needs. Further observations are then made by the nurture teacher in order to determine whether or not the nurture group could meet the child's needs. If appropriate, an educational psychologist will make an individual assessment; however, this is not a requirement. Based on the information gathered from observation and assessment, the school staff and the child's parents will determine if the nurture group is the appropriate placement for the child. Once a child begins in the nurture group, it is typical that he or she remains in the group for between one and four school terms (Boxall, 2002).

Classic nurture groups consist of small classes of between 8-10 children, and are situated in a neighborhood school. The nurture groups are understood and supported by the whole staff at the school. Some nurture groups are considered full-time; the children spend the whole day with the group. Other nurture groups are part-time; the children register with their regular classrooms in the morning and return to them for part of the day with the support of the nurture staff. These options reflect a continuum of need, from the insecure child who is responsive to support, to those who are functioning so inappropriately that they cannot make progress in the mainstream classroom (Boxall, 2002).

The nurture group was designed to provide children with an educational bridge to full-time placement in mainstream classrooms. This is done by combining the features of a caring home environment with formal educational demands. Nurture group rooms are deliberately set up to include many features one would expect to find in a traditional home. For instance, there is comfortable furniture, kitchen and dining amenities. For children who have been unsuccessful in the school setting, the traditional classroom

furniture (desks, chairs, and chalkboard) can evoke feelings of anxiety and failure. The dining table in the nurture group room, on the other hand, has positive associations tied to it. The dining table is used for meals as well as for school work. A central feature of the nurture group routine is breakfast, during which the children and staff engage in a formal dining experience. The purpose of this activity is for the children to interact socially. This has been cited as the most popular aspect of the nurture group routine, because children associate this experience with feelings of pleasure and social acceptance. As a result, when the children use the dining table for schoolwork, their positive feelings associated with the table can help overshadow their negative feelings associated with sitting at a traditional classroom desk. Although original nurture groups include many features of a family setting, they are designed to involve the children in group activities. Such activities enable the children to learn group participation skills necessary for successful engagement in a mainstream classroom. The group setting also helps prevent the children from developing inappropriate child-adult attachments that could challenge the parent-child relationship (Boxall, 2002).

The nurture group has two staff members, a teacher and an assistant. The teacher's initial objective is to build a trusting relationship between him or her and the child. As a trusting relationship is formed, it is hoped that the child will develop and experience a secure attachment with the teacher. The teacher does not try to replace the parent-child attachment relationship; rather, he or she intends to form an educational attachment. The children are encouraged to develop trusting and caring relationships with adults within the confines of the educational setting. These relationships are focused on helping the children to learn and practice positive social skills (Cooper & Whitebread,

2007). It has been found that positive social engagement with others influences students to become more actively engaged in the formal learning activities of the classroom (Cooper & Tiknaz, 2007). The nurture staff acts as any attentive parent would; they are always listening to the child, commenting on what the child tells them, expanding on it, and helping the child to make sense of the world (Boxall, 2002). Research indicates that children value having their thoughts, feelings, and opinions heard and acknowledged by adults and by other students. Providing students with this opportunity serves to promote cognitive development, increase their self-esteem, and supports a sense of educational empowerment (Cooper & Tiknaz, 2007).

Routine is the broad structure for the nurturing process. All lessons and activities are considered secure routines, because they are always explained and no prior knowledge is taken for granted. This helps the child create secure expectations, which in turn reinforces trust and fosters the development of a secure relationship. The classic nurture group day is structured in a manner similar to a standard school day. The National Curriculum is taught; however, the nurture staff takes a more holistic approach. The curriculum is strongly influenced by an understanding of the relationship between emotion, behavior, and social activity. This is unlike the traditional curriculum, which is narrowly focused on cognitive abilities. Research has suggested that learning strongly affects, and is affected by, emotions and feelings. The social, emotional, and behavioral barriers to learning must be recognized in order for these children to succeed in school. The goal of the nurture group curriculum is to remove such barriers, and to use positive emotion to enhance the students' learning experiences. The original curriculum is divided into the following four sections: (1) personal, social and health education; (2)

communication, language and literacy; mathematical development; (3) scientific knowledge and understanding; and (4) humanities and creative processes. Not all students in nurture groups follow the whole curriculum; instead, they utilize the curriculum where it matches their specific needs. The goals of the staff are to understand the resulting gaps in the children's development, to meet the children at the stages that they have reached, and to offer emotional acceptance and appropriately focused teaching. The teachers give whatever emotional and educational assistance the child needs to learn and succeed. Fitting the curriculum to the individual child is achieved by offering work that is appropriate and meaningful to the child, taking into account his or her developmental needs as well as the formal curriculum (Cooper & Tiknaz, 2007). The Boxall profile and educational assessments are used to help determine the social and developmental targets for each child. Individual learning tasks are chosen, based on the staff's perception of the child's current needs in relation to the data gathered from structured assessments (Boxall, 2002).

Modern nurture groups. In the late 1980's, traditional nurture groups fell victim to a changing educational climate in which any sort of alternative schooling came to be seen as exclusive. Although many schools held onto their nurture groups, there was no longer a developing national focus. However, advocates of the program were able to advocate and draw the government's attention to the nurture group's relevance to many aspects of policy: reducing exclusions, raising academic standards, and increasing social inclusion by reducing truancy and improving behavior. The need for early identification and intervention was stressed, citing nurture groups as an example of good practice (Cooper & Whitebread, 2007). This advocacy work led to the publication of the first

book about nurture groups (Bennathan & Boxall, 1996). This book aroused widespread interest and nurture groups were soon recommended by the U.S government as an effective early intervention. The government's *Every Child Matters* agenda solidified their institutionalization (DfEE, 2004). Following this recognition, The Nurture Group Network was established; it is defined as a national registered charity, providing support to nurture group practitioners through the delivery of training programs, publications, a quality assurance program, and research. The Nurture Group Network has made it possible to set up groups all over the world, and the interest continues to grow (Boxall, 2002).

Nurture Groups were originally developed in the school setting, as opposed to the laboratory, and as a result the transportability of the intervention has not been evaluated. However, it is important to know how this intervention can be effectively translated to other settings. In order to better understand how this can be done it is necessary to think about translational research in general.

Translational Research

Translational research is used to translate the findings from basic research studies more quickly and efficiently into practice, in an effort to produce meaningful mental, physical, and social outcomes. The goal is to create a continuous feedback loop in order to promote the translation of data into knowledge. There are two areas of translation included in translational research. The first is the application of findings from the laboratory to clinical practice, and included in this, findings from clinical observations can be translated back to the laboratory for further testing. The second area of translation

involves implementing the best practices in the community. Translational research is practiced in biological, behavioral, and social sciences (Woolf, 2008).

Traditionally, research has been separated into two categories: basic research and applied research. Although basic research has led to scientific breakthroughs in practice, it is quite long term and often takes several years to be applied. In comparison, applied research represents smaller improvements to current processes, and can have an impact within a short period of time (Koshland, 1993). The vast separation between the two fields has made it difficult to create multidisciplinary teams that are necessary for successful translational research. Translational research has the potential to advance the field of applied science, because its goal is to remove existing barriers to multi-disciplinary collaboration. The integration of multiple fields is necessary for successful translational research, because information and data must be organized and be able to flow from the clinics and participants of studies to the research laboratories and back again. Through the sharing of data the underlying causes and outcomes of illness can be discovered and effective treatments can be created (National Advisory Mental Health Council, 2000).

Translational research has been a common practice in the medical science field; however, such practices have been far less common in psychology (Tashiro & Mortensen, 2006). Based on the need to promote the development of translational science in the field of psychology, the National Institute of Mental Health (NIMH) has placed a strong emphasis on translational research. NIMH, a part of the federal government, is the largest research organization in the world specializing in mental illness. NIMH has created three divisions specifically devoted to funding basic research that contributes to

the treatment of mental disorders. These include: (1) research on behavioral and social processes; (2) biopsychosoical research; and (3) research on the development of behavioral or social procedures for measurement and analysis. Researchers from the institute argue that the collaboration between clinicians and basic researchers will promote the development of effective treatments for mental and behavioral disorders (Dingfelder, 2005). NIMH has provided the following definition: "Translational research in the behavioral and social sciences addresses how basic behavior processes inform the diagnosis, prevention, treatment, and delivery of services for mental illness, and, conversely, how knowledge of mental illness increases our understanding of basic behavioral processes" (National Advisory Mental Health Council, 2000, p. iii).

Within the field of psychology, translational research has the opportunity to address the long-standing issue of the gap between science and practice. It provides a framework for shifting basic scientific knowledge into effective treatments for mental disorders. In general, applied research has been able to demonstrate the fact that psychotherapy is efficacious. However, the reasons why psychotherapy works and specific mechanisms of change are not clear (Tashiro & Mortensen, 2006). Translational research not only brings basic research from the lab to applied studies, but it can also examine the components of an existing treatment in the laboratory under controlled conditions. This could lead to the isolation of the specific treatment modalities responsible for clinical improvement. The goal is to understand the underlying mechanisms of action, and these findings are critical to fine-tuning and implementing effective treatment protocols (Lerman, 2003). Translational research represents a means for researchers and clinical workers alike, i.e., to recognize the middle ground between

the internal validity expectations of the laboratory, and the external validity expectations of clinical settings. Through this practice, it is hoped that psychology's best laboratory science can be moved efficiently into effective clinical applications (Tashiro & Mortensen, 2006).

Although translational research represents the opportunity for practitioners to translate research findings into improved care, there are many barriers to doing so successfully in the field of psychology. It is an overwhelming task to identify and implement interventions that meet the needs of a diverse population with mental health problems. This task is even more daunting when the efforts are focused on priority groups, such as children. Practitioners look to researchers for answers regarding those services that will work best for whom, and in what settings. In addition, practitioners seek to understand those specific variables that will hinder or improve treatment outcome. In order to answer these questions and identify evidence-based practices that can be successful in the real world, traditional behavioral and clinical scientists must be willing to work in collaboration with multidisciplinary teams. In addition, once evidence-based treatment manuals are developed, researchers must collaborate with other professionals in order to establish ways to make the manuals accessible to practitioners outside of the laboratory. This kind of interdisciplinary approach can be a great challenge, because practitioners and researchers must be committed to working together to incorporate their individual theories, findings, and methodologies to improve not only what is known about psychopathology, but also how to treat it effectively. Until this commitment is made from both parties across the field, information will continue to be lost in the

translation of research into effective interventions in the real-world setting (Corrigan, Bodenhausen, Markowitz, Newman, Rasinski, & Watson, 2003).

In order for practitioners and researchers to commit to the progression of translational research in psychology, it must be made clear how to engage in such practices effectively. Presently, there are no clinical treatment guidelines that advocate for the science of psychology and for translating research results into clinical practice. The absence of such guidelines represents a major obstacle to implementing empirical treatments successfully in the community. However, the American Psychological Association (APA) is currently working on establishing such clinical treatment guidelines that will aim at synthesizing psychological research and practitioner knowledge. These guidelines are critical because of psychologists' need to show accountability for their work, and to establish the most effective ways to deliver patient care. In addition, such guidelines will help further close the gap between science and practice by gathering comprehensive information about effective, empirically supported interventions currently utilized by practitioners. APA is in the process of establishing an advisory committee of psychologists that will be responsible for developing the clinical treatment guidelines. It is hoped that the first set of guidelines will be completed within the next two years (Munsey, 2010). The establishment of specific clinical treatment guidelines is a necessary first step to promoting the practice of effective translational research throughout the field of psychology.

Conclusion

The implementation of effective school-based mental health services creates the opportunity to minimize negative consequences for children with SEBD and for their

families, as well as to promote successful learning and academic achievement (Upshur, Wenz-Gross, & Reed, 2009). In general, behaviorally based classroom interventions have been most effective at targeting a range of behavioral problems among school-aged children. Such interventions are considered to be an evidence-based treatment for children with ADHD, ODD, and early-onset conduct problems. In particular, behavioral classroom interventions have been especially effective at treating children with ADHD, the most common disorder affecting children in the school setting (Pelham, Wheeler, & Chronis, 1998). Barkley's (1997) theory of ADHD highlights the importance of behavioral interventions that take place in the classroom setting, at the point of performance. He characterizes children with ADHD as having core impairment in behavioral inhibition. These children have difficulty planning for the future, and this causes them to have trouble relating consequences to actions. However, children with ADHD do not necessarily lack the skills needed for planning and regulating behavior, or for sustaining attention; rather they have difficulty at the point of performing these behaviors. As a result, behavioral classroom interventions that provide children with motivation and consequences in the immediate present, or at the point of performance, tend to be most effective (Barkley, 1997).

Behavioral interventions at the point of performance, as discussed above, are a main component of the Catch Nurture Program. The children enrolled in the program spend the majority of the school day in their regular classroom with the daily support of the nurture staff. While in the classroom, the staff provides the children with support at the point of performance through the use of behavior modification tools, such as token reinforcement. In addition, the staff provides the same support when the children are

taken out of class to participate in group activities. Although other therapeutic tools are also utilized within the program, based on research, it is likely that the behavioral interventions employed at the point of performance produce the most significant outcomes for children in the program. Unfortunately, there is no protocol for the Catch Nurture Program, making it difficult to evaluate the consistency and quality of the behavioral interventions being implemented. However, utilizing a translational research approach, the current study aimed to evaluate the program and its feasibility as it is currently being run in the community.

Chapter 3: Hypotheses

Hypotheses

1) *Difference in scores at time 1 based on diagnosis and gender:* It is hypothesized that participants diagnosed with ADHD as well as male participants will score higher on the externalizing and ADHD sub-scales of the CBCL and TRF at time 1. It is also hypothesized that participants without a diagnosis of ADHD as well as female participants will score higher on the internalizing subscales of the CBCL and TRF at time 1.
2) *Nurture Program Outcomes*: It is hypothesized that scores on the internalizing, externalizing, and ADHD sub-scales of the CBCL and TRF will improve over time for participants in the Catch Nurture Program.
3) *Impact of ADHD on Program Effectiveness*: It is hypothesized that scores on the internalizing, externalizing, and ADHD sub-scales of the CBCL and TRF will demonstrate greater improvements over time for those participants diagnosed with ADHD.
4) *Impact of Gender on Program Effectiveness*: It is hypothesized that there will be no differences in scores over time on the internalizing, externalizing, and ADHD sub-scales of the CBCL and TRF, based on the participant's gender.

Justification for Hypotheses

1) ADHD is diagnosed three times more frequently in boys, compared with girls, making it more likely for males to exhibit symptoms of the disorder (Bloom & Cohen, 2006). In addition, ADHD is an externalizing disorder and as a result, those carrying the diagnosis tend to display more externalizing behaviors (APA,

2000). Furthermore, males are more likely to express psychological symptoms externally, but females tend to internalize their symptoms (Bongers, Koot, Van De Ende, & Verhulst, 2004).

2) In general, effective school-based intervention programs have been shown to improve the overall functioning of children with mental health problems (Upshur, Wenz-Gross, & Reed, 2009). More specifically, research has demonstrated that school-based interventions focusing on attachment relationships have produced significant improvements in children's social, emotional, and behavioral functioning (Cooper & Tiknaz, 2007).
3) School-based services have been found to be especially well suited for children with ADHD because of the high levels of school dysfunction they exhibit. In addition, school-based services that utilize effective behavioral classroom interventions have shown to target successfully children's ADHD symptoms and other associated functional impairments (Daly, Creed, & Xanthopoulos, 2007).
4) Research has not demonstrated any reasons to suggest that school-based services utilizing behavioral classroom interventions, social skills training, problem-solving skills training and coping skills training would impact boys differently from girls.

Chapter 4: Methodology

Overview

This is an archival study evaluating the Catch Nurture Program, a school-based intervention for children with social, emotional, and behavioral difficulties. The program was evaluated by examining data collected on each student enrolled in the program for at least 4 months, using the Achenbach Child Behavior Checklist (CBCL) and the Achenbach Teacher Report Form (TRF). This study assessed each student's progress overtime by examining the initial CBCL and TRF completed at the time of intake (time 1) and a second CBCL and TRF completed 4 months later (time 2). Every participant had a complete CBCL filled out by his/her legal guardian, as well as a complete TRF filled out by his/her classroom teacher both at time 1 and at time 2.

Design and Design Justification

This is a retrospective study, examining data that have already been collected by the Catch Nurture Program.

Participants

The participants in this study included 115 students that are either currently enrolled in the Nurture Program or have been enrolled within the last 2 years. All participants attend a public elementary school located in a low income, inner-city community in South Philadelphia. The participants' ages range from 6 to 16 years (M=10.20, SD=2.381). For greater specificity regarding the demographics of the participants including age, gender, and race refer to Table 1.

Inclusion and Exclusion Criteria

Inclusion criteria. The participants in this study must exist in the Nurture Program's data set. Students become a part of the data set after they have been evaluated by a child psychologist, and are authorized by Community Behavioral Health (CBH) to receive services from the Nurture Program. CBH is a non-profit corporation, managed by the city of Philadelphia. They provide a wide range of mental health and substance abuse services to children and adults who are uninsured, underinsured, or Medicaid eligible. In order for a child to receive authorization for mental health services, the child must carry a mental health diagnosis. Acceptable mental health diagnoses within the Nurture Program include all Axis I clinical disorders, with the exception of Autistic Disorder. Participants in this study must have been enrolled in the Nurture Program for a minimum of 4 months, allowing for the collection of data upon entry into the program and again 4 months later. In order to be included in the study each parent's CBCL and each teacher's TRF must be complete for time 1 and time 2.

Exclusion criteria. Students diagnosed with Autistic Disorder or Mental Retardation are not eligible to receive services from the Nurture Program, and therefore could not be included in this study. In addition, students with private insurance are unable to receive Nurture Program services. Participants of the Nurture Program were excluded from the study if they had been enrolled in the program for fewer than 4 months. Participants were also excluded if the CBCL and TRF were incomplete or missing information from time 1 and time 2.

Recruitment

All children recommended for the Nurture Program must attend one of the nine elementary schools in South Philadelphia in which the program exists. Any teacher or administrator from one of the schools can refer a child to the program. In addition, a child can be referred by his or her parent or legal guardian. After a child has been referred, his/her classroom teacher must complete a behavior rating scale in order to record his or her observations of the child. The Nurture clinician will then observe the child in class and check his or her medical assistance status. If the child is eligible for CBH coverage, the clinician will contact the child's parent or guardian to obtain consent and to gather additional information. If the child appears appropriate for the Nurture Program based on the information gathered thus far, the child is then scheduled for a Comprehensive Biopsychosocial Evaluation (CBE) with a child psychologist in order to receive an official recommendation for the program. During the CBE, the psychologist interviews the child's legal guardian, the child, and the child's teacher in order to gather information regarding the child's behavior problems. The psychologist will then examine the data collected during the interviews, as well as the data from the behavior rating scale filled out by the teacher, and a Conners rating scale completed both by the legal guardian and by the teacher. The psychologist will use all of the information gathered to diagnose the child with a mental health disorder, when appropriate. After the intake is complete and CBH has approved services, the child begins attending the Nurture Program immediately.

Measures

Child-Behavior-Checklist (CBCL; Achenbach & Rescorla, 2001). The CBCL was originally developed in order to address the problem of defining child behavior

problems empirically. It is used as a tool for a child's parents or caregivers to rate the child's behavioral problems and competencies. It is also used to measure a child's change in behavior over time or following treatment. The CBCL was designed to be completed independently by the child's caregiver; however, an interviewer can also administer it orally. The first section of the questionnaire includes 20 competence items, covering the child's activities, social relationships and school performance. The second section of the CBCL consists of 118 items that describe specific behavior and emotional problems, and 2 open-ended items for reporting additional concerns. For each of the 120 items, caregivers are instructed to rate their children on how true each item is for them currently, or within the past 6 months, using the following scale is used: 0 = not true; 1 = somewhat or sometimes true; and 2 = very true or often true. The main constructs measured by the CBCL are: aggression, hyperactivity, bullying, conduct problems, defiance, and violence. The subscales of the CBCL include: aggressive behavior, anxious/depressed, attention problems, delinquent rule-breaking behavior, social problems, somatic complaints, thought problems, withdrawn, internalizing, externalizing, total problems, plus DSM-oriented scales (affective problems, anxiety problems, somatic problems, attention deficit/hyperactivity problems, oppositional defiant problems, and conduct problems) (Achenbach & Rescorla, 2001). The current study examined the internalizing and externalizing subscales, as well as the attention deficit/hyperactivity DSM-oriented scale.

The CBCL was normed on a sample of 1,753 children, ages 6-18. The race and socioeconomic status of these children were proportionate to the composition of the U.S. population in general. Individual item interclass correlations were .84 for behavior problems and .97 for social competencies. Test-retest reliability was .89. These reliability

coefficients indicate that the CBCL is, overall, a reliable measure. In addition, several studies have supported the content, construct, and criterion-related validity of the CBCL (Achenbach & Rescorla, 2001). The CBCL is one of the most widely used instruments in research on childhood psychopathology because of its many advantages. This instrument provides a reliable and valid assessment of a variety of symptoms present in children at different ages. In addition, Teacher Report Forms (TRF), Youth Report Forms (YRF), and Direct Observation Forms (DOF) are available for the CBCL. These separate forms allow for cross informant comparisons to be made, and covers a broad range of behavioral symptoms across a wide age range. The ease of administration and scoring has facilitated its use among practitioners and researchers (Drotar, Stein, & Perrin, 1995).

Teacher Report Form (TRF; Achenbach & Rescorla, 2001). The TRF is very similar in structure and content to the CBCL; however, the child's teacher is the one providing the information. The TRF is designed to gather information from the child's teacher regarding academic performance, adaptive functioning, and behavioral/emotional problems. Teachers are instructed to rate how well a child is doing academically in each subject, ranging from 1 (far below grade level) to 5 (far above grade level). If appropriate, there is also space to record any cognitive or achievement test scores for the child. For adaptive functioning, teachers use a 7-point scale in order to compare the child with others their age on how hard he/she is working, how appropriately he/she is behaving, how much he/she is learning, and how happy he/she is. The second section of the TRF, similar to the CBCL, consists of 118 items that describe behavioral and emotional problems. Ninety-three of the 118 items are also found on the CBCL. The remaining items cover school behaviors that parents and caregivers would not have the

opportunity to observe. The same rating scale from the CBCL is used on the TRF. The scoring profile for the TRF consists of T scores and percentiles for academic performance and total adaptive functioning, as well as for the eleven subscales, and the six DSM-oriented scales that are also scored from the CBCL (Achenbach & Rescorla, 2001). The current study examined the same scales both on the CBCL and on the TRF: the internalizing and externalizing subscales, and the attention deficit/hyperactivity DSM-oriented scale.

Procedure

Initially, permission was obtained from the Catch agency to use the data collected from the Nurture Program for this study. The agency then granted the investigator access to the database on which all of the necessary information is stored.

Analysis of Risk/Benefit Ratio

Potential benefit to others. This study has the potential to benefit all professionals who treat children in the school setting. It provides information regarding those treatment strategies that can be effective in reducing social, emotional, and behavioral problems in school aged children. More specifically, this study benefits both CBH and the Catch agency. It provides them with information regarding the strength and feasibility of the Nurture Program that they are funding and implementing. This study also provides them with information regarding those populations that appear to benefit most highly from the program.

Procedures for Maintaining Confidentiality

All of the data gathered by Nurture Program is protected by an Internet security system and it is also password protected. When data for this study were transferred to a

disc, an identification number was given for each name in the database in order to maintain confidentiality.

Implementation of the Catch Nurture Program

The current study examined the Catch Nurture Program, which is modeled after the original nurture group work by Marjorie Boxell (Bennathan & Boxall, 1996). The Philadelphia Behavioral Health (OBH)/Community Behavioral Health (CBH) began implementing this program in Philadelphia in 2004. This program consists of 12 nurture groups within nine designated neighborhood schools across the South Philadelphia region. These groups serve as a school-based behavior health program; these have replaced school "wrap-around" services. All nine groups operate as part of the elementary school community. The Catch Nurture Program aims to meet the needs of children within the framework of mental health diagnoses. The goals of the program are as follows: (1) To help students overcome emotional and behavioral barriers that prevents independent functioning in the school setting; (2) To help consumers work successfully towards their treatment goals via group and individual therapy, and classroom behavioral support; and (3) To enhance the development of, and positively reinforce appropriate school behaviors geared toward academic success. In order to meet the goals of the program successfully, the nurture staff works to develop a secure attachment with each child through which other empirically validated therapeutic tools can be utilized. Behavior modification is considered the main ingredient within the intervention. Behavioral techniques, such as positive reinforcement, are incorporated into all of the nurture group activities. In conjunction with behavior modification, other therapeutic tools are also utilized, among them are: behavioral classroom interventions, social skills

training, problem-solving skills training and coping skills training. However, there is no protocol for this program, making it difficult to know those interventions that are being implemented on a consistent basis. In addition, there are limited relevant training opportunities for the staff. Currently, the yearly training procedure for the staff includes seven hours of specific training (confidentiality, note writing, psychiatric emergencies, crisis management, universal precautions, fire safety, suicidal clients, cultural diversity, disaster training) and ten hours of additional training (passive restraint training, standard documentation training, CPR, theory training). It should be noted that all of the specific trainings are paper and pencil trainings, in which the staff is instructed to read packets and take quizzes in order to demonstrate mastery of the material. Furthermore, none of the trainings that are offered focus directly on the behavioral interventions that lie at the heart of the overall intervention program. As a result, the quality of the interventions being implemented is unknown.

Each nurture group consists of approximately 10 students and 2 staff members. The staff consists of one master's level therapist and one bachelor's level therapist, both of whom have earned their degrees in psychology or closely related fields. The therapists receive one hour of group supervision per week, outside of the school environment. Currently, there are three clinical supervisors within the Catch Nurture Program, all of whom have their masters or license in psychology. Generally, supervision consists of discussions surrounding difficult clients and ways to make the specific interventions more effective for them. The supervisors do not provide any live supervision, because they rarely observe the staff in the school setting. In addition, the overall program is supervised by a full time mental health professional that acts as the Program Director; a

care coordinator, who keeps in contact consistently with the children's families and helps the families access other human services entities, also assists each school. Furthermore, there is a full-time psychiatrist and a full-time psychologist who are assigned to work with the participants in the Nurture Program.

The Catch nurture groups are considered part-time. The children enrolled in the program spend the majority of the school day in their regular classrooms with the daily support of the nurture staff. While in the classroom, the bachelor's level therapist provides preventative support via behavior modification tools, such as token reinforcement, and one-to-one assistance while maintaining the teacher's authority. An individualized behavior modification plan is set up for each student, focused on his or her specific problem behaviors. For instance, a child who is impulsive and easily distracted can earn points in class when he or she is observed engaging in positive behaviors, such as raising his or her hand, staying in his or her seat, and completing his or her work. At the end of each day the child can use the points to "buy" a prize.

In addition to receiving classroom support, students enrolled in the Nurture Program are taken out of class at the same time each day, for one hour, in order to participate in a nurture group activity with the master's level therapist. The master's level therapist typically runs 2 different groups per day (approximately 5 children per group), and, ideally, the participants are assigned to a group, based on their ages and developmental levels. However, there are no explicit guidelines regarding how the participants should be grouped; as a result, the grouping of the participants varies across schools, and some groups consist of children from varying age groups. The daily group activities are chosen by the therapist, and are based on the current needs and goals of the

students. All of the activities are generally geared towards improving the students' social skills, problem-solving skills, and coping skills; however, the individual activities used to target such skills may vary for different age groups. Because there is no treatment manual, the therapist must rely on his or her own clinical judgment when selecting appropriate group activities. An example of an activity used to target coping skills and emotional expression is one in which each child would pick a feeling word out of a hat (e.g., happy, sad, frustrated), and each would be coached through a role play during which he or she would try to demonstrate how to express his or her feelings appropriately. Following each role-play, the therapist would lead a group discussion regarding how to cope effectively with each feeling, using specific examples from the students. This activity can be tailored for different age groups; for instance, with older children there may be less emphasis on role-playing and the majority of the session could be spent engaging the students in a group discussion about their individual experiences. Students enrolled in the Nurture Program are also taken out of class on an as-needed basis for individual therapy sessions. Most often, the individual sessions are focused on individual treatment goals, and on problem solving surrounding various situations that have caused the child to get into trouble at school.

In combination with the individualized behavior modification plans, a group behavior modification system is utilized that is consistent for all students in the program. Each child has the opportunity to earn two stickers every day. One sticker reflects his or her behavior in the classroom, and the second reflects his or her behavior during the group activity. The bachelor's level therapist works in collaboration with the different classroom teachers in order to determine those students who earn their classroom stickers

on a daily basis. The master's level therapist is responsible for determining those students who earn their stickers for the group activity. In general, students will lose their stickers for fighting, walking out of the room without permission, refusing to follow directions after two warnings, showing continuous disrespect after two warnings, refusing to complete assigned tasks, and for throwing or kicking objects. At the end of every month there is a reward party for those students who were able to earn at least 80% of their stickers. The behavior chart is displayed in the nurture classroom as motivation for the students.

Students are typically authorized by CBH to receive services from the Nurture Program for one full academic year. If a child's problems continue to persist at a significant level after the first year, he or she must be re-evaluated by the child psychologist. If necessary, the psychologist will ask CBH to approve additional time in the program; the amount of time varies based on the severity of the symptoms. However, in most cases, after one year in the program the children are ready to be stepped down to a lower level of care. After completing the Nurture Program, the students are typically referred to outpatient services one time per week in order to maintain their treatment gains.

The Catch Nurture program is a school-based intervention that has combined existing, validated treatments for children with SEBD. However, even though all of the therapeutic tools are empirically validated on their own, it is unknown whether or not they are effective when used in conjunction with one another for this particular population. For this reason, it cannot be said that the Catch Nurture Program is an empirically valid treatment as a whole. Nonetheless, research has demonstrated that

positive outcomes will result from school-based services like the Nurture Program; these incorporate collaboration and consultation with the teacher, behavioral management plans, and evidence-based individual and group psychotherapy for the child (Roberts, Vernberg, Biggs, Randall, & Jacobs, 2008). Similar programs, such as the RECAP program discussed previously, have been able to demonstrate support for the combination of such treatments. The RECAP program has produced significant effects in the amelioration of symptoms and in the prevention of deterioration of functioning (Weiss, Harris, Catron, & Han, 2003). In addition, research has demonstrated that evidence-based treatments are able to retain their effectiveness when transported to children in impoverished communities (Owens, Murphy, Richerson, Girio, & Himawan, 2008). Overall, the Catch Nurture Program aims to provide a firm, safe and positive place for children in order to engage them in a therapeutic process of helping.

Catch nurture program compared with original nurture groups. The title, "Nurture Group", is one of few similarities between the Catch Nurture Program and the structure of the original nurture groups. In addition to the title, both operate within the school setting, and both emphasize the importance of establishing a trusting relationship between the staff and child. Although these similarities exist, the Catch Nurture Program is more fundamentally different than it is similar to the original nurture group structure. As previously discussed, the original nurture groups are strongly rooted in attachment theory. All of the activities and interventions utilized within these groups are focused on helping the children develop and experience a secure attachment with the teacher. Although the Catch Nurture Program is said to be established out of the same philosophy, attachment theory principles are not incorporated into its general structure. Instead, the

focus is on establishing a strong therapeutic alliance, through which empirically validated therapeutic tools can be used.

Another major difference between the two groups lies within the specific interventions utilized. In the original groups, the National Curriculum is taught by the staff in a setting that resembles a traditional home. The children typically remain with the nurture group throughout the day, and the teaching and practicing of positive social skills is a main component of the intervention. The structure of these groups is clearly outlined in books, and the activities utilized are relatively consistent across groups. In comparison, the Catch Nurture groups are focused solely on therapeutic interventions, and no time is spent in teaching the children academics. The children in Catch Nurture groups remain in the mainstream classroom for the majority of the day with the support of the nurture staff. They are taken out of class for only one hour a day to participate in therapeutic activities with the staff. Behavior modification is the main therapeutic tool utilized within the Catch Nurture Program; this was not a component of the original intervention. In conjunction with behavior modification, other therapeutic tools are also used; among these are: behavioral classroom interventions, social skills training, problem-solving skills training and coping skills training. In addition, there is no protocol for the Catch Nurture Program, making it difficult to know if the interventions are consistent across the nine different groups. In general, both the Catch Nurture Program and original nurture groups operate under the assumption that in order to produce positive outcomes among the children placed in nurture groups, a supportive relationship between the staff and child must be in place. However, the means of establishing this relationship and what is done after the relationship is in place, significantly varies between the two groups.

Chapter Five: Results

Mean and Standard Deviations

To begin the analysis, the mean and standard deviations were calculated for scores on the internalizing, externalizing, and ADHD subscales of the CBCL and TRF. For greater specificity refer to Table 2.

Difference in Scores at Time 1

To test hypothesis 1, a multivariate analysis of variance (MANOVA) was conducted to assess whether or not there were differences in scores on the internalizing, externalizing, and ADHD subscales of the CBCL and TRF at the time of intake (time 1), based on gender and diagnosis of ADHD. It was hypothesized that at time 1, participants diagnosed with ADHD as well as male participants would score higher on the externalizing and ADHD subscales, and that participants without a diagnosis of ADHD as well as female participants would score higher on the internalizing subscales. The results indicated that there was no effect for gender, because there were no significant differences found between males and females on the internalizing, externalizing, or ADHD subscales of the CBCL and TRF, $F (6, 106) = .78$, $p = .590$. It should be noted that these results do not represent a direct comparison of males and females, because T scores were used and they are normalized on their respective gender. Regarding differences based on diagnosis, a trend effect was observed on the CBCL and TRF, $F (6, 106) = 2.05$, $p = .065$. A univariate ANOVA was conducted in order to determine where the significant differences could be found. The results indicated that there was a significant difference on the ADHD subscale of the CBCL, based on diagnosis ($p = .054$), with an effect size of $d = .44$. In addition, a significant difference was found on the

ADHD subscale of the TRF (p = .012), with an effect size of *d* = .33. However, there were no significant differences found on the internalizing and externalizing subscales of the CBCL and TRF. Last, the results of the MANOVA indicated that the interaction between gender and diagnosis was not significant, F (6, 106) = .94, p = .471. Overall, it is indicated that the scores on the three subscales of the CBCL and TRF do not differ for boys and girls at the time of intake. In addition, it was found that the scores on the internalizing and externalizing subscales of the CBCL and TRF did not differ, based on a diagnosis of ADHD, and these results are inconsistent with the hypothesis. However, participants diagnosed with ADHD were observed to score higher on the ADHD subscales of the CBCL and TRF, and this finding is consistent with the hypothesis.

Nurture Program Outcomes

To test hypothesis 2, a repeated measures ANOVA was conducted to assess whether or not there were differences in scores on the internalizing, externalizing, and ADHD subscales of the CBCL and TRF at the time of intake (time 1) and 4 months later (time 2). It was hypothesized that the scores on all of the subscales of both measures would improve over time for participants in the Catch Nurture Program. Results indicated that that there was no significant difference on the internalizing subscale of the CBCL, F (1, 113) = 1.94, p = 1.66. There was, however, a significant difference found on the externalizing subscale of the CBCL, F (1, 113) = 12.00, p = .001, with an effect size of *d* = .23. In addition, a significant difference was found on the ADHD subscale of the CBCL, F (1, 113) = 8.74, p = .004, with an effect size of *d* = .21. It is important to note that even though significant differences were found on the externalizing and ADHD subscales of the CBCL, the differences are marginal, and represent only a small amount

of change over time. With regards to the TRF, there was no significant difference found on the internalizing subscale, F (1, 114) = .54, p = .464. However, the results indicated that there was a significant difference found on the externalizing subscale of the TRF, F (1, 114) = 7.13, p = .009, with an effect size of d = .24. Last, there was no significant difference found on the ADHD subscale of the TRF, F (1, 114) = 2.23, p = .138. Overall, it is indicated that both parents and teachers have observed small, but significant improvements in the participants' externalizing behaviors over time. However, only parents have observed a significant improvement in the participants' ADHD symptoms. Furthermore, both parents and teachers reported no change in the participants' internalizing behaviors over time. These results are partially consistent with the hypothesis, because noteworthy improvements were observed on only some of the subscales.

Impact of ADHD on Program Outcomes

To test hypothesis 3**,** a repeated measures ANOVA was conducted to assess whether or not there were differences in scores on the internalizing, externalizing, and ADHD subscales of the CBCL and TRF at the time of intake (time 1) and 4 months later (time 2), based on a diagnosis of ADHD. It was hypothesized that the scores on all subscales would demonstrate greater improvements over time for those participants diagnosed with ADHD. The results indicated that there were no significant differences found on the externalizing and ADHD subscales of the CBCL. In addition, there were no significant differences found on the internalizing, externalizing, and ADHD subscales of the TRF. However, there was a trend effect observed on the internalizing subscale of the CBCL, F (1, 112) = 3.71, p = .057, with an effect size of d = .11. According to parental

report, the internalizing behaviors of participants without ADHD are improving over time, compared with participants diagnosed with ADHD. These results are inconsistent with the hypothesis.

Impact of Gender on Program Outcomes

To test hypothesis 4, a repeated measures ANOVA was conducted to assess whether or not there were differences in scores on the internalizing, externalizing, and ADHD subscales of the CBCL and TRF at the time of intake (time1) and 4 months later (time 2), based on the participant's gender. It was hypothesized that there would be no differences in scores over time on any of the subscales based on the participant's gender. The results indicated that there were no significant differences found on the internalizing, externalizing, and ADHD subscales of the CBCL. In addition, there were no significant differences found on the externalizing and ADHD subscales of the TRF; these findings are consistent with the hypothesis. However, there was a significant difference found on the internalizing subscale of the TRF, $F(1, 113) = 9.37$, $p = .003$, with an effect size of $d = .25$. According to teachers, the female participants' internalizing behaviors are improving over time, compared with males; this finding is inconsistent with the hypothesis.

Chapter Six: Discussion

Changes in Externalizing Behaviors

The results of the current study provide some support for the Catch Nurture Program in the treatment of children with social, emotional, and behavioral difficulties in the school setting. For specificity regarding the significant results, including effect sizes, refer to Table 3. Overall, parents and teachers observed small, but significant improvements in the participants' externalizing behaviors over time. Although these results showed some effect, the effect sizes were minimal (d = .23 and .24). As previously discussed, behavior modification is considered the active ingredient within this treatment package, and it may be the treatment component that is responsible for the observed changes in the children's behavior. Generally speaking, behavioral interventions will focus on reducing problematic and disruptive behaviors, and such behaviors tend to be external in nature. Previous research has indicated that behavioral interventions have produced more significant effects on measures of children's external behaviors, and such results are consistent with the current findings (DuPaul & Eckert, 1997). In addition, externalizing behaviors are easier to measure and observe, making it more likely for parents and teachers to observe improvements within this domain (Gaertner, Fite, & Colder, 2010). Although the Nurture Program was originally conceived as a means of addressing children's emotional issues by providing a nurturing environment, it is possible that the behavioral aspects of the intervention are producing the most significant changes among the participants' behaviors.

Changes in Internalizing Behaviors

Neither parents nor teachers observed a change in the participants' internalizing behaviors over time, with the exception of a trend effect observed for children without a diagnosis of ADHD. However, this effect size was very small (d = .11), and significantly lower, compared with what has typically been found by other researchers in examining school based intervention programs. (e.g., Kratochwill, McDonald, Levin, Scalia, & Coover, 2009; Evans, Axelrod, & Langberg, 2004). The assessment of internalizing behaviors among children can be challenging because such behaviors are often difficult to observe through reliable external methods of measurement (Kazdin, 1990). Therefore, researchers have recommended the use of self-report measures as a means of reliably assessing childhood internalizing symptoms (Kazdin, 1990). However, the current study did not allow for the use of such measures and this is an important consideration for future research. Self-report measures allow for the assessment of internal and subjective perceptions, emotions, and cognitions, which can be difficult for others to identify accurately (Merrell, 1994). For this study, the use of parent and teacher ratings as a sole means of assessing the participants' internalizing symptoms represents a potential problem, and as a result, the current findings may not reliably capture the participants' improvements within this realm.

Parent versus Teacher Observations

In this study, only parents observed small, but significant improvements in their children's ADHD symptoms over time. Although these results showed some effect, the effect size was minimal (d = .21). A potential explanation for this finding is that the Nurture staff is responsible for intervening in the classroom when Nurture group

participants are having behavioral difficulties. As a result, the participants' parents tend to receive fewer phone calls from teachers regarding behavior problems after they are enrolled in the program. Consequently, this may cause parents to perceive that their child's symptoms are improving, even though teachers in the classroom do not observe such improvements. In addition, African Americans represent the majority of the population in this study (73%), and research has indicated that minority families tend to be undereducated about ADHD (Bussing, Schoenberg, & Perwien, 1997). As a result, their limited knowledge regarding the symptoms of the disorder may influence their ratings in this domain.

It is important to point out that as the Nurture Program operates currently, there are limited opportunities for parental involvement. The program does not offer any structure or guidelines regarding how to educate parents and get them involved in their child's treatment. The lack of parental involvement most likely impacts the participant's progress negatively in treatment as well as in the implementation of the program. The involvement of key stakeholders, such as parents, is critical to the support of and ultimate success of a school mental health program (Acosta, Tashman, Prodente, & Proescher, 2002). Although there are many barriers to working with low-income families, because parents may not have the time or resources to be fully involved, it is necessary for the Nurture Program to identify and implement a variety of strategies (e.g. parent training) to increase the amount of parental involvement throughout the intervention. According to research, the success of mental health programs with low-income parents depends on sensitivity to the needs of various parent groups (Acosta, Tashman, Prodente, & Proescher, 2002). Therefore to increase parental involvement, the Nurture Program must

tailor the intervention to meet the parent's needs. Doing so would likely enhance communication between parents and their children, improve communications between the school and the home, and lead to better outcomes and behaviors for their children.

Impact of a Diagnosis of ADHD on Program Outcomes

Generally, when comparing children who have a diagnosis of ADHD with children who do not have this diagnosis, similar improvements in the participants' behaviors, can be observed, despite their diagnoses. The only exception was observed among the participants' internalizing behaviors. Based on parental report, the internalizing behaviors of participants without ADHD are improving overtime, compared with participants diagnosed with ADHD. However, as previously stated this effect size (*d* = .11) is significantly smaller than that typically observed in research studies examining school based intervention programs (e.g., Kratochwill, McDonald, Levin, Scalia, & Coover, 2009; Evans, Axelrod, & Langberg, 2004). Again, it must be stressed that internalizing behaviors among children are difficult to assess without the use of a self-report measure. Therefore, the results within this domain must be interpreted with caution because they may not reliably capture the participants' actual improvements (Kazdin, 1990).

Additionally, it should be mentioned that a trend effect was observed at the time of intake on the CBCL and TRF, based on the participants' diagnoses. After further analysis, it was concluded that the only significant differences were found on the ADHD subscales of both measures. According to both parents and teachers, the ADHD symptoms of children diagnosed with the disorder were more highly elevated at the time of intake. This was an expected finding and one that is consistent with previous research.

It is important to note that previous research studies have also found that children with ADHD had higher CBCL scores for internalizing and externalizing problems, as well as higher TRF scores for externalizing problems, but this was not observed in the current study (Biederman, et al., 1996).

Effective Treatment for ADHD

Multimodal, comprehensive interventions are viewed as the standard for treating children with ADHD. A variety of valid treatment options have been established for this population, including: stimulant medication, parent training, and behavioral intervention strategies (Abikoff, 2001). Unfortunately, the Catch Nurture Program does not offer a multimodal treatment approach, because the intervention primarily is behaviorally focused. As a result, the program is unable to differentially target children with ADHD. Although behavioral interventions have been identified as an empirically supported treatment for this population, such interventions have also been shown to improve the functioning for children with a range of mental health diagnoses (Pelham, Wheeler, & Chronis, 1998). In order for this intervention to differentially target children with ADHD, the behavioral interventions must be paired with pharmacological treatment, and the participants' parents must also be involved (MTA, 1999a). Even though the Catch Nurture Program offers medication options, in order to receive such services the child's parent(s) must be willing to take him or her to a separate office in order to meet with the psychiatrist. The majority of the population in this study represents African Americans (73%), and it has been found that African American families tend to have greater reservations about medication treatment, possibly making it less likely for them to put forth additional effort into receiving such services (Schnittker, 2003). In addition, it has

been found that parents of children with ADHD who live in the inner city and belong to minority groups have greater skepticism about the benefits of mental health treatment in general, making it less likely for them to attend an appointment with a psychiatrist (Guevara, Feudtner, Romer, et al., 2005). Such findings highlight the importance of parental involvement in the treatment of children with ADHD, particularly for this population. Education about the disorder can play a crucial role in guiding parents towards seeking out the most effective treatments for their child. It is important to note that the actual number of participants taking medication in this study is unknown. This represents a serious confound to this study, because the impact of medication on the effectiveness of the program cannot be determined.

When treating children diagnosed with ADHD it is important to consider how neurological difficulties associated with the disorder may interfere with the intervention being implemented. Research has clearly indicated that the core symptoms of ADHD are related to a neurological deficit. There are a number of neuropsychological abilities (executive functions) that are found to be impaired in children with ADHD. Such impairments interfere with an individual's ability to develop self-control and execute goal-directed behaviors appropriately. The severity and level of impairment associated with the child's symptoms is heavily influenced by the child's psychosocial context (e.g., home and school environment). These children have problems using internally represented information in order to control their behavior, and instead, their behavior is controlled by the immediate context and its consequences. Therefore, effective behavioral interventions must provide children with motivation and consequences in the immediate present or at the point of performance (Barkley, 1997). The incorrect implementation of

behavioral approaches (behavior-modification techniques) can cause children with ADHD to fail to respond. Minor errors in the application of such techniques can completely negate the effects of the interventions. This type of intervention requires training, persistence, and most of all, a high degree of motivation on the part of teachers and parents.

Impact of Gender on Program Outcomes

The participants' gender had a minimal impact on the program's outcomes. Generally speaking, the externalizing behaviors and ADHD symptoms both of male and of female participants improved equally over time. In support of the current findings, research has indicated similar responsiveness to behaviorally focused psychological interventions across genders (MTA, 1999a). The only significant difference was observed among the internalizing behaviors of the participants. According to teachers, the female participants' internalizing behaviors are improving over time, compared with males' behaviors. However, parents did not observe this difference, because they reported that the internalizing behaviors both of males and of females improved equally over time. Although teachers reported a greater effect for females, it should be noted that the effect size was small (d = .25). A potential explanation for the teachers' observations is that girls tend to be more communicative about their psychological symptoms, making it easier for teachers to observe improvements in their internalizing symptoms (Boldizar, 1991). In addition, parents may not have observed the same differences because teachers have the opportunity to compare the behaviors of boys and girls in the classroom, but parents have only their children to observe. Furthermore, the improvements observed by the teachers may not generalize to the home environment because the interventions are

implemented at the point of performance in the school environment. The generalization of treatment effects across settings is a primary goal of psychological intervention; however, particularly for children with ADHD, it is most often found that children have difficulties in appropriately transferring treatment gains to other situations and settings (Abikoff, 2009). A potential solution to this problem is the addition of a parent-training component to the Nurture group intervention. This would provide the opportunity to train parents on how to implement behavioral interventions at the point of performance in the home environment, in the hope of generalizing all of the treatment gains acquired in the school setting.

It is important to note that at the time of intake into the program there were no significant differences observed on any of the subscales, based on the participants' gender. However, it should be mentioned that these results do not represent a direct comparison of males and females, because T scores were used and these are normalized on their respective genders. Nonetheless, this was surprising because ADHD is diagnosed three times more frequently in boys than in girls, making it more likely for males to exhibit elevated symptoms of the disorder (Bloom & Cohen, 2006). In addition, males are more likely to express psychological symptoms externally, but females tend to internalize their symptoms (Bongers, Koot, Van De Ende, & Verhulst, 2004). The fact that boys and girls did not differ in their scores on the internalizing, externalizing, and ADHD subscales of the CBCL and TRF can be explained, partially, by the population in this study. All of the participants attend inner-city schools and come from low socioeconomic backgrounds, placing them at an increased risk for difficulties in the school environment. This is based on the notion that both males and females from such backgrounds tend to

exhibit more problematic behaviors due to their environmental circumstances (Marcon, 1999).

Impact of Therapeutic Alliance on Program Outcomes

Overall, although this study demonstrated some small, but significant improvements in the participants' behavior over time, it cannot be determined whether or not such improvements are the direct result of the Nurture Program. As previously discussed, the main goal of The Catch Nurture Program is to develop a strong therapeutic alliance with the participants through which other empirically validated therapeutic tools can be utilized, behavior modification foremost among them. The therapeutic alliance refers to the extent to which the client and therapist are able to bond, work collaboratively, and have a positive relationship. Many researchers have focused on the therapeutic alliance and the effect it can have on therapeutic change. It has been found that therapeutic alliance statistically predicts therapeutic change among children and adolescents (Henry, Strupp, Schacht, & Gaston, 1994). However, researchers have also noted that it is difficult to know if the therapeutic alliance was the actual mechanism for change, because it is possible that very early in treatment, clients show some improvement and that they then form a stronger alliance with the therapist as a result (Kazdin & Nock, 2003). Recent research has suggested that symptom change and therapeutic alliance mutually influence each other, because symptom changes early in treatment predicted alliance and that alliance also predicted further symptom change (Barber, Connolly, Crits-Christoph, Gladis, & Siqueland, 2000). These findings highlight the potential influence of therapeutic alliance within the Nurture group intervention. However, in the current study, because there was no control group and no repeated, long-

term assessments it cannot be determined what aspect of the intervention led to behavioral changes among the participants.

Although the actual component of change within the Nurture group intervention cannot be determined based on this study, it is likely that the establishment of a therapeutic relationship played a significant role. Although behavioral interventions have produced change on their own, therapeutic alliance facilitates the use and adherence to such techniques. As a result, alliance is considered to be a necessary, but not a sufficient, therapeutic change factor (Castonguay, Constantino, McAleavey, & Goldfried, 2010). Although certainty cannot be established regarding the results of this study, it is thought that the behavioral changes among the participants would have been less significant in the absence of therapeutic alliance. Therefore, it is strongly believed that the actual component of change within this intervention is a combination of the behavioral interventions and the development of a strong therapeutic alliance; the establishment of alliance seems necessary to implement such interventions successfully.

Future Research and Program Development

Overall, the functioning of the participants in the Catch Nurture Program has been shown to have improved marginally over time. However, there are many areas in which the program could improve, and as a result produce more significant improvements for the participants. Although the Catch Nurture Program claims to be a variant of the original Nurture group concept, the program's core principles appear to depart from those of classic Nurture groups. The Catch Nurture Program takes place outside of the normal curriculum of the Philadelphia School District, and it fails to adhere to the fundamental philosophies of the classic approach in terms of the developmental emphasis and the

holistic curriculum. According to treatment integrity research, this type of variant has the potential to provide important social and emotional support for children; however, improvements in the social-emotional realm may not generalize to the children's academic engagement (Cooper & Whitebread, 2007). Consequently, the Catch Nurture Program does not truly implement an evidence-based practice, as it claims to do.

There is no treatment protocol for the Catch Nurture Program that is currently being implemented in the Philadelphia school district. In order for more research to be conducted on the effectiveness of this program, the program must first be manualized. Treatment manuals are now considered an essential element of psychological treatment research (Najavits, Weiss, Shaw, & Dierberger, 2000). These have been found to lead to the successful development, evaluation, and dissemination of empirically validated treatments, and furthermore it has been demonstrated that they standardize treatment effectively (Baker, McFall, & Shoham, 2008). A treatment manual includes a declaration of the principles and procedures of a psychological intervention. A clear description of the treatment is necessary because the effectiveness of an intervention cannot be determined without being able to say exactly what the treatment is. In addition, researchers must know if the intervention they are studying is being properly implemented (Najavits, Weiss, Shaw, & Dierberger, 2000). Such procedures reduce the methodological issues caused by inconsistent therapist outcomes and lead to the formulation of explicit clinical recommendations (Crits-Christoph & Mintz, 1991).

It is necessary to point out that although there are many benefits to utilizing manualized treatments, there are potential limitations as well. The feasibility of implementing a manualized treatment in the context and time frame allowed is an

essential consideration for researchers and practitioners, particularly when working in a school setting. Research has indicated that in the school context, researchers must work collaboratively with practitioners, educators, and community members when developing a treatment manual to ensure the feasibility and effectiveness of the implementation procedures. A collaborative development process will lead to the establishment of a realistic set of interventions and a practical treatment manual (Evans, Green, & Serpell, 2005).

In order to formalize the Catch Nurture Program, it must be decided initially if it would be more effective for the intervention to emphasize the underlying principles of the original approach, particularly regarding its developmental emphasis, because research has demonstrated the fact that the implementation of the original approach leads to statistically significant improvements for Nurture group participants (Cooper & Tiknaz, 2007). It is important to note that researchers have indicated that Nurture groups based on the ideology behind the classic model but that differ in structure and/or organizational features can still be considered authentic versions of the original approach (Cooper & Whitebread, 2009). Therefore, it seems possible for Catch Inc. to be able to implement a valid variant of the original Nurture group structure by adhering to the original philosophies but at the same time meeting the structural demands of the Philadelphia School District. However, it must be taken into account that the majority of research conducted on the original Nurture groups took place in the United Kingdom, and that cultural differences between populations must be considered. The influence of such differences on the implementation and success of the program have not been evaluated in research, and as a result it is unknown whether or not existing cultural differences cause

the original structure to be ineffective for the U.S. population, and the inner-city population in particular. This study examined a version of the original program and cultural differences may have played a role in the small effects observed for the population under investigation. For instance, the majority of the participants in the current study were African American (73%), and Blacks represent a very small portion of the population in the United Kingdom (2%), the place where the majority of previous research has taken place (Office for National Statistics, 2001). The specific ethnicities of the participants included in previous Nurture Group research studies are unknown, because they were not reported in the individual studies.

A second option is for The Catch Nurture Program to formalize the interventions that are currently being implemented. However, more research is necessary in order to determine the actual effectiveness of such interventions as part of a treatment package. Presently, The Catch Nurture Program has combined existing, validated psychological treatment approaches (therapeutic alliance; behavioral interventions) for children, with no evidence that this is an effective approach. It is unknown whether or not such treatment approaches are effective when used in conjunction with one another for this particular population. Furthermore, because of the unstructured nature of the program, there is no assurance regarding the fidelity of the implementation of the intervention components, and deviations from the program components could have produced unintended consequences on program outcomes. Research has suggested that treatment manuals represent a key factor in maintaining the integrity of the implementation of an intervention (Mihalic, Fagan, & Argamaso, 2008). Overall, further research is needed in

order to demonstrate that The Catch Nurture Program is in fact implementing an evidence-based practice.

Additionally, the amount of training and supervision provided to the clinicians can have a large impact on their ability to implement the intervention effectively (Schoenwald & Hoagwood, 2001). This is another area in which The Catch Nurture Program must improve. Currently, there are limited formalized trainings for the staff, none of which directly focus on behavioral interventions, which lie at the heart of the overall intervention program. In addition, there is no live supervision, making it very difficult for supervisors to monitor the actual implementation of the interventions. Researchers have indicated that the success of an intervention can be critically diminished with the absence of specialized training and ongoing support for reliability of implementation (Schoenwald & Hoagwood, 2001).

Informal interviews conducted with program administrators. Over the course of the study, informal interviews were conducted with the director of The Catch Nurture Program, as well as with the three current supervisors. These interviews provided the opportunity to assess their individual perceptions of the program and ways in which they think it can be improved. Both the program director and the supervisors consistently referred to The Catch Nurture Program as the "Americanized" version of the original Nurture group structure. Reportedly, after Community Behavioral Health (CBH) initially introduced the program to Catch Inc., it was discovered that many of the original intervention components were not conducive to the environment in which the program was going to operate. This was due mainly to the constrictions put on the program by the Philadelphia School District. CBH, a non-profit corporation, managed by the city of

Philadelphia, is responsible for providing a wide range of mental health services to children and adults who are uninsured, underinsured, or Medicaid eligible. Based on the school districts policies and curriculum, particularly the No Child Left Behind Act, they would not allow Catch Inc. to include the academic portion of the intervention. As a result, it was difficult to take the children out of the classroom setting for the recommended three hours per day. Because the school district did not accept the original model, CBH gave Catch Inc. permission to mold the intervention to fit the Philadelphia School District. Consequently, Catch Inc. had to attempt to balance the integrity of the original nurture program with the demands of the Philadelphia School District. As a result, it was decided to cut the group time down to one hour per day. In order to make up for the lost time, Catch Inc. incorporated individual therapy and classroom support into the intervention. According to the director, at this time it was also decided that a behavior modification component would be added to the treatment package. However, no reason for this change was provided. He further reported that the behavioral modification component demonstrably is the backbone of the treatment package, because it is utilized within every component of the intervention (classroom support, individual therapy, group therapy). However, with that being said, the director and the supervisors believe that relationship building has to come first, and a trusting therapeutic relationship is necessary for the interventions to be successful.

Suggestions for improving the Catch Nurture Program. The program director and the supervisors agreed that there are specific areas in which The Catch Nurture Program must improve, including training procedures, supervision, and communication. The director of the program clearly reported that specific trainings on behavior analysis

and behavior modification are needed in order for the staff to implement the treatment package successfully. As he stated, the program tends to utilize generic rewards systems that fail to motivate the children successfully. Furthermore, the supervisors reported that more training should be provided for the school staff as a means of enhancing their understanding and acceptance of the program. In addition, both the director and the supervisors shared the idea that more supervision should be provided to the clinicians. Particularly, the supervisors feel as though they need to monitor the staff more closely with regard to those interventions that are actually being implemented. All of the supervisors consistently suggested that live supervision, in the school setting, should be provided as a means of improving the implementation of the program. Finally, it was reported, steadily, that increased communication between the school, staff, administrators, and CBH is needed. An increase in open communication would provide the opportunity for all parties to discuss and address ongoing problems and concerns.

Barriers to improving the Catch Nurture Program. Although the director and supervisors of the program were able to pinpoint consistently those areas in which the program could improve, they were equally able to identify the existing barriers to making such improvements. The two biggest barriers reported were the requirements of CBH and the school's acceptance and understanding of the program. According to all three supervisors, because of the amount of administrative work required by CBH, they have little time to devote to their clinical responsibilities. As a result, there is a lack of focus on the therapeutic interventions and reportedly this contributes to a lack of motivation among employees. In addition, it was reported that the school's perception and understanding of the mental health system interferes with the success of The Catch

Nurture Program. Generally speaking, the schools involved have not been able to demonstrate a clear understanding of the Nurture Program, despite ongoing consultation with the staff. The school personnel continuously utilize the program as a means of disciple for the children, but they fail to accept the program as part of the mental health system. In addition, it has been commonly observed that schools tend to become avoidant once a child is enrolled in the program and teachers no longer provide the necessary academic support. Teachers fail to accept the fact that a child can have mental health issues and still require learning support. According to the program director, the failure to collaborate successfully with the school system certainly inhibits the potential success of the Nurture Program, overall.

The information gathered during these informal interviews further substantiates the notion that The Catch Nurture Programs differs significantly from the original Nurture group structure. Although therapeutic alliance was recognized as an essential ingredient within the intervention, there was no mention of attachment theory and the role this plays within the structure and implementation of the program. In addition, the behavior modification and individual therapy components added by Catch Inc. were not included as part of the original intervention. It appears as though Catch Inc. created a novel intervention in order to meet the demands of the Philadelphia School District, yet tried to incorporate the relationship factor that lies at the heart of the original Nurture group structure.

Although the administrators were able to identify areas in which the program could improve, it appears as though they doubt their ability to implement such improvements because of the barriers faced by the program as whole. However, it should

be recognized that the failure to implement the suggested improvements appears to perpetuate and maintain the challenges they face. Conversely, if such improvements were made to the program, the barriers would likely collapse as a result. Although it is helpful that the administrators of The Catch Nurture Program are able to identify the elements needed to improve the program, they must now put their thoughts into actions, because this is the only way that change will occur. As a means of making the necessary changes, it is important for the program administrators to incorporate what other researchers have identified as the best practices regarding school based interventions.

Best Practices Regarding School Based Interventions

Important theoretical and practical considerations must be taken into account when developing, implementing, and evaluating a model school-based mental health program. Researchers have identified specific factors that are important best practices in the process. The first is the integration of theory, research, and practice. Through the use of the scientist-practitioner model, practitioners working in the school setting are encouraged to engage in the reciprocal process, in which research and theory guide practice and the results in practice inform further research (Meyers & Nastasi, 1999).

The second factor involves the employment of a collaborative/participatory model, in which researchers and practitioners collaborate with stakeholders and decision makers within the community as a means of ensuring that the program properly attends to the specific needs of the system and the needs of the individuals within the system. In order for a program to be successful it must be tailored to the specific needs of the school community, the students, and the families it is intended to serve (Meyers & Nastasi, 1999).

The third factor involves continuous program evaluation, which is a critical component of exemplary school-based mental health programs. When done properly, data from program evaluation inform both theory and practice, providing a justifiable foundation for program implementation. Acceptability, integrity, and efficacy represent the three key components included in the evaluation process. Acceptability refers to the participants' beliefs and attitudes about the program's feasibility and usefulness. This information can be gathered through interviews, focus groups, or questionnaires (Nastasi, Varjas, Bernstein, & Pluymert, 1997). Integrity refers to the extent to which the intervention is implemented, as intended. Treatment integrity is essential to establishing what the treatment is and to evaluating its effectiveness. Failure to ensure treatment integrity can have serious implications for the results gathered about the relationship between treatment and outcome. Treatment integrity is best established by specifying a treatment protocol, providing vigilant training of therapists, and monitoring therapists' adherence to the treatment protocol and competence in delivering the intervention components (Hagermoser Sanetti & Kratochwill, 2009). Last, program efficacy refers to the examination of program outcomes. This element of program evaluation assesses the extent to which the program meets its declared goals and it also examines inadvertent program outcomes. Methods for assessing program efficacy include: interviews, observation, self-report measures, and rating scales. Continuous program evaluation, including all three components, is essential because it leads to the validation of services and provides important information for further program development (Nastasi, Varjas, Bernstein, & Pluymert, 1997). It is necessary for practitioners to be mindful of these factors when developing, implementing, and evaluating school-based mental health

services. Awareness of such factors will facilitate the likelihood of long-term program success.

Limitations

There are several limitations to the current study that must be addressed. First, the findings may represent distinct characteristics of the South Philadelphia population. The participants in this study represent and homogenous sample, because all live in low-income, inner-city communities. Therefore the conclusions may not generalize to a national sample. With that being said, the homogenous sample can also be viewed as a strength of this study, because there is a pressing need for conducting more research in impoverished settings and with minority children.

Second, because of the study design it was not possible to randomize participants and create a control group. Ideally, when evaluating the effectiveness of an intervention the experimental group receiving treatment would be compared with a control group receiving a benign intervention and/or a control group that did not get any treatment. In addition, the study did not allow for the completion of a post-assessment, because the participants' behaviors were evaluated after 4 months of treatment, as opposed to the time when the intervention was complete. Consequently, without a control group it cannot be determined whether or not the participants' improvements were a direct result of the intervention, because there may have been a placebo effect. It is possible that any treatment would have had an effect regardless of what it was. The participants' observed improvements may be based solely on other factors such as enrollment into the program, a strong therapeutic alliance with the staff, or a regression to the mean, as opposed to the

actual treatment. As a result, the intervention must be further investigated in future studies, using an experimental or quasi-experimental design.

Third, because of the reliance on behavior rating scales, the results of the current study are based solely on the perceptions of the participants' parents and teachers. Although behavior rating scales have been shown to represent an efficient means of obtaining others' perceptions regarding the presence and severity of a child's behaviors, research has also indicated that behavioral changes in children do not necessarily affect another's perceptions concerning the child (Merrell, 2003; Bloomquist, August, & Ostrander, 1991). As a result, it is possible that the findings from the current study underestimate the participants' actual progress. It has been suggested that newly acquired skills and behaviors necessitate longer-term strengthening before the changes are salient enough to alter others' perceptions (Bloomquist, August, & Ostrander, 1991). Furthermore, research has also indicated that teacher and parent characteristics are a greater influence on ratings than child characteristics in an elementary school population (Gomez, Burns, Walsh, & De Moura, 2003). Therefore it may be necessary to assess key parent and teacher characteristics at the time they rate the child. Had this been done, such characteristics could be included in the scoring to reduce this cause of measurement error. However, regarding the teacher ratings in particular, research has shown that elementary school teachers are a reliable and valid source of information regarding their students. Teacher ratings are valued because teachers have the opportunity to observe children in a structured setting and they have a sample of normal functioning children to which they can compare the child being assessed (Evans, Allen, Moore, & Strauss, 2005). In research it is common to rely on teacher and parent ratings to draw conclusions about the effect of

the interventions being tested; however, such results should be interpreted with caution, because there are basic measurement problems associated with the use of such assessment methods. As a result, there is mixed evidence regarding the reliability and validity of such ratings (Merrell, 2003).

Information regarding the individual participant's medication status was not reported in this study, and this represents a fourth limitation, because the impact of medication on the effectiveness of the program cannot be determined. As a result of this confound, coupled with the absence of a control group, the specific variables responsible for the observed changes in behavior cannot be specified. It cannot be assumed that the participants' improvements were a direct result of the intervention, because medication may have played a significant role. In order to rule out this potential confound, researchers must gather information about specific participant characteristics, such as medication status, that can later be analyzed for equivalence across conditions.

Time represents a fifth limitation to the current study in two distinct ways. First, these results represent the participants' behavioral changes after only four months of treatment. As previously mentioned, behavioral changes among children tend to be gradual, and may necessitate longer-term strengthening before significant gains can be observed (Bloomquist, August, & Ostrander, 1991). Therefore, more significant improvements may have been observed on a post-assessment, following treatment. As a result, the findings from this study represent only the participants' initial improvements, but the long-term treatment gains for this population are still unknown. Second, all of the data for this study were not collected at the same time. The participants of this study entered the Nurture Program at varying times over the course of the previous three years;

however, the initial CBCL and TRF completed at the time of intake and a second CBCL and TFR completed four months later was analyzed for all participants. Therefore, the time of year at which the participants entered the program may have impacted the results. For instance, at the beginning of the school year teachers know less about their students, and their initial ratings may not be reflective of their students' true behavioral difficulties.

A final limitation to this study is that there is no treatment protocol for The Catch Nurture Program. Although every treatment team is instructed to utilize evidence-based interventions including: behavioral classroom interventions; social skills training; problem-solving skills training and coping skills training, no guidelines exist regarding specific activities that should be used for each intervention. In addition, there are no procedures regarding the sequence in which the interventions should be implemented. For this study, there was no way to ensure treatment integrity across the different Nurture groups. The failure to do so poses threats to the experimental validity of this study and as a result, limited inferences can be made about the relationship between treatment and outcome. Although this represents a challenge regarding the ability to replicate the results, this study does provide useful information regarding the program as it is currently being run in the community; it also offers suggestions regarding how the program must improve before further research can be conducted.

Conclusion

Effective school-based services are in extremely high demand because of the high prevalence of diagnosable mental health disorders among children. However, a large gap remains between the research and practice of such services (Owens, Murphy, Richerson, Girio, Himawan, 2008). In particular, ADHD is one of the most common disorders

affecting children in the school setting, and despite its prevalence, there is a lack of treatment studies examining services for this population in the real-world setting (Leslie et al., 2008). The majority of research done on school-based mental health services for children with ADHD has been conducted in highly controlled settings. Although such results are informative regarding the most effective treatments, it is often unknown whether or not the findings from efficacy trials generalize to community practice (Owens, Murphy, Richerson, Girio, Himawan, 2008).

The present study aimed to fill the existing gap between research and practice. It was originally hoped that the results would provide researchers and practitioners with information regarding the extent to which certain evidence-based treatments can be successfully implemented in the school setting. However, after critical analysis, it was determined that further research is needed before the Catch Nurture Program can be considered an evidence-based practice. The current study did, however, demonstrate that the interventions utilized by the Catch Nurture Program have the potential to effectively treat children with a wide range of mental health diagnoses from underserved communities. Yet, because of the unstructured nature of the program it is unknown exactly what interventions are being implemented on a consistent basis, therefore making it difficult to assess for whatever is responsible for producing change among the participants. This study highlights the importance of formalizing interventions that are currently being implemented in the community so that further research can be conducted in order to determine the actual mechanism of change within the treatment package, and also to demonstrate that the intervention is evidence-based. Furthermore, treatment manuals represent an essential component in maintaining the integrity of an intervention.

The findings from this study also provide important implications for the treatment of children with ADHD in the school setting. This study did not find the hypothesized differences between children with and without a diagnosis of ADHD, because it was expected that children with ADHD would improve more significantly over time, across domains. However, the effect size was small for all participants despite their diagnoses. The small effect observed among children with ADHD may be related to their need for multimodal treatment, because researchers have found that a multimodal treatment approach is most effective for this population (Abikoff, 2001). In addition, it is possible that the effect size was small for children without ADHD for a similar reason. Researchers have indicated the need for more intensive/multimodal treatments for children with severe SEBD (Henggeler, Schoenwald, Rowland, & Cunningham, 2002). The participants in this study may represent such a population due to the complicating factors and environmental circumstances that accompany living in an inner city, impoverished community. Generally speaking, these results suggest the need to increase the scope of the Catch Nurture Program into a more multimodal approach that could benefit all children more significantly.

The participants of this study represent an underserved population. All of the students enrolled in the Catch Nurture Program attend a public elementary school located in a low income, inner-city community in South Philadelphia. Traditionally, mental health services have not been extensively evaluated in impoverished settings (Weisz, Jensen-Doss, & Hawley, 2005). The findings from this study offer implications regarding effective interventions that can be adapted for high poverty communities, because the results help demonstrate that children from this population can improve over time.

However, the Nurture Program is lacking specific components that have been demonstrated to target this particular population more effectively. For instance, as evidenced by research, there is a strong relationship between parental involvement and improved outcomes for students, particularly for children whose families are of low socioeconomic status and/or ethnic minorities (Ho, 2002). It is suggested that future researchers include family members as key stakeholders in order to address this issue. This can be done through Participatory Action Research (PAR) because such research methods allow for increased collaboration, as well as the opportunity to gather important information regarding the cultural/contextual variables specific to the particular setting. Too often programs are implemented as set programs and they are not adapted to meet the specific needs of students, staff, parents, and community members at a particular school. It addition, PAR creates the chance for parents to become more highly educated, and as a result it is hoped that there will be an increase in their motivation and commitment to becoming more involved in the treatment of their children (Ho, 2002).

Overall, through the use of a translational research approach, the findings from this study assist in identifying and describing a school based intervention that is currently being implemented in the real-world setting, for an underserved population. It is necessary for more translational research to be done in this area, because this study, along with others, have demonstrated that not all school based services are actually implementing evidence-based treatments as they claim to do (Rones & Hoagwood, 2000). In addition, this study provides recommendations regarding how the Catch Nurture Program can be improved; the hope is that future research can demonstrate that it is truly an evidence-based intervention.

References

Abikoff, H. (2001). Tailored psychosocial treatments for ADHD: The search for a good fit. *Journal of Clinical Child Psychology, 30* (1), 122-125.

Abikoff, H.A., Hechtman, L., Klein, R.G., Gallagher, R., Feiss, K., Etcovitch, J., Cousins, L., Greenfield, B., Martin, D., & Pollack, S. (2004). Social functioning in children with ADHD treated with long-term methylphenidate and multimodal psychosocial treatment. *Journal of the American Academy of Child and Adolescent Psychiatry, 43,* 820-829.

Abt Associates (2001). National evaluation of family support programs: volume B. *Research studies: Final report.* Cambridge, MA: Author Retrieved October 27, 2010, from http://www.abtassoc.com/reports/NEFSP-VolB.pdf

Achenbach, T.M., & Rescorla, L.A. (2001). *Manual for ASEBA School-Age Forms & Profiles.* Burlington, VT: University of Vermont, Research Center for Children, Youth, & Families.

Acosta, O.M., Tashman, N.A., Prodente, C., & Proescher, E. (2002). Implementing successful school mental health programs: Guidelines and recommendations. In H. Ghuman, M. Weist, & R. Sarles (Eds.), *Providing mental health services to youth where they are: School and community-based approaches*. New York: Taylor Francis

Ainsworth, M.D.S. (1989). Attachments beyond infancy. *American Psychologist, 44,* 709-716.

Alkon, A., Ramler, M., & MacLennan, K. (2003). Evaluation of mental health consultation in child care centers. *Early Childhood Education Journal, 31,* 91-99.

Allen, J.P., Kuperminc, G.P., & Moore, C.M. (1997). Developmental approaches to understanding adolescent deviance. In S.S. Luthar, J.A. Burack, D. Cicchetti, & J. Weisz (Eds.), *Developmental Psychopathology: Perspectives on Risk and Disorder* (pp. 548-567). Cambridge: Cambridge University Press.

Alto, J.L., & Frankenberger, W. (1994). Effects of methylphenidate on academic achievement from first to second grade. *International Journal of Disability, Development and Education, 42,* 259-273.

American Psychiatric Association (APA) (2000). *Diagnostic and Statistical Manual of Mental Disorders,* Fourth Edition, Text Revision. Washington, DC: America Psychiatric Association.

Anastopoulos, A.D. & Barkley, R.A. (1988). Biological factors in Attention Deficit Hyperactivity Disorder. *The Behavior Therapist, 11*, 47-53.

Baker, T.B., McFall, R.M., & Shoham, V. (2008). Current status and future prospects of clinical psychology towards a scientifically principled approach to mental and behavioral health care. *Psychological Science in the Public Interest, 9,* 67-103.

Barber, J.P., Connolly, M.B., Crits-Christoph, P., Gladis, L., & Siqueland, L. (2000). Alliance predicts patients' outcome beyond in-treatment change in symptoms. *Journal of Consulting and Clinical Psychology, 68,* 1027-1032.

Bennathan, M. & Boxall, M. (1996). *Effective intervention in primary schools: Nurture groups.* London: David Fulton

Bennathan, M. & Boxall, M. (1998). *The boxall profile: A handbook for teachers.* Maidstone: AWCEBD.

Barkley, R.A. (1997). *ADHD and the nature of self-control.* New York: Guildford Press.

Barkley, R.A. (1998). Attention-deficit hyperactivity disorder: A handbook for diagnosis and treatment (2nd ed.). New York, NY: The Guilford Press.

Barkley, R.A. (1997). Behavioral inhibition, sustained attention, and executive functions: Constructing a unifying theory of ADHD. *Psychological Bulletin, 121,* 65-94. doi: 10.1037/0033-2909.121.1.65.

Barkley, R.A., Fischer, M., Smallish, L., & Fletcher, K.E. (2002). The persistence of attention-deficit/hyperactivity disorder into young adulthood as a function of reporting source and definition of disorder. *Journal of Abnormal Psychology, 111,* 279-289.

Barkley, R.A., Grodzinsky, G., DuPaul, G. (1992). Frontal lobe functions in attention deficit disorder with and without hyperactivity: A review and research report. *Journal of Abnormal Child Psychology, 20,* 163-188.

Barkley, R.A. (2006). Attention-deficit hyperactivity disorder: A handbook for diagnosis and treatment (3rd ed.). New York: Guilford Press.

Barrett, S., Bradshaw, C., & Lewis-Palmer, T. (2008). Maryland statewide PBIS initiative. *Journal of Positive Behavior Interventions, 10,* 105-114.

Biederman, J., Monuteaux, M.C., Doyle, A.E., Seidman, L.J., Wilens, T.E., Ferero, F., Morgan, C., & Faraone, S.V. (2004). Impact of executive function deficits and attention-deficit/hyperactivity disorder (ADHD) on academic outcomes in children. *Journal of Consulting and Clinical Psychology, 72,* 757-766.

Biederman, J., Faraone, S., Milberger, S., Guite, J., Mick, E., Chen, L., Mennin, D., Marrs, Ouellette, C., Moore, P., Spencer, T., Norman, D., Wilens, T., Kraus, I., & Perrin, J. (1996). A prospective 4-year follow-up study of attention-deficit hyperactivity and related disorders. *Archives of General Psychiatry, 53,* 437-446.

Bloom, B. & Cohen, R. (2006). Summary health statistics for U.S. children: National health interview survey, 2006. National center for health statistics. *Vital and Health Statistics, 10,* 1-87. Retrieved from http://www.cdc.gov/nchs/data/series/sr_10/sr10_234.pdf.

Bloomquist, M.L., August, G.J., & Ostrander, R. (1991). Effects of a school-based cognitive-behavioral intervention for ADHD children. *Journal of Abnormal Child Psychology, 19,* 591-605.

Boldizar, J.P. (1991). Assessing sex typing and androgyny in children: The children's sex role inventory. *Developmental Psychopathology, 27,* 505-515.

Bongers, I.L., Koot, H.M., Van Der Ende, J., & Verhulst, F.C. (2004). Developmental trajectories of externalizing behaviors in childhood and adolescence. *Child Development, 75,* 1523-1537.

Bowlby, J. (1988). *A secure base: Parent-child attachment and healthy human development.* New York: Basic Books.

Boxall, M. (2002). *Nurture groups in schools: Principles & Practice.* London: Paul Chapman.

Bradshaw, C., Reinke, W., Brown, L., Bevans, K., & Leaf, P. (2008). Implementation of School-Wide Positive Behavioral Interventions and Supports (PBIS) in elementary schools: Observations from a randomized trial. *Education and Treatment of Children, 31,* 1-26.

Braun, J.M., Kahn, R.S., Froehlich, T., Auinger, P., & Lanphear, B.P. (2006). Exposures to environmental toxicants and attention deficit hyperactivity disorder in U.S. children. *Environmental Health Perspectives, 114*(12), 1904-1909. doi: 10.1289/ehp.10274.

Brestan, E.V., & Eyberg, S.M. (1998). Effective psychosocial treatments of conducted-disordered children and adolescents: 29 years, 82 studies, and 5,272 kids. *Journal of Clinical and Child Psychology, 27,* 180-189.

Bruns, E., Walrath, C., Glass-Siegel, M., Acosta, O., Anderson, K., & Weist, M. (1999). *Outcomes associated with expanded school mental health in Baltimore: The school mental health climate survey*. Baltimore, MD: Baltimore Mental Health Systems, Inc.

Buhrmester, D., Camparo, L., Christensen, A., Gonzales, L., & Hinshaw, S. (1992). Mothers and fathers interacting in dyads and triads of normal and hyperactive sons. *Developmental Psychology, 28,* 500-509.

Burns, M.K., & Coolong-Chaffin, M. (2006). Response to intervention: The role of and effect on school psychology. *School Psychology Forum: Research in Practice, 1*(1), 3-15.

Burt, A., Krueger, R.F., McGue, M., & Iacono, W. (2003). Parent-child conflict and the comorbidity among childhood externalizing disorders. *Archives of General Psychiatry, 60,* 505-513.

Bussing, R., Schoenberg, N.E., & Perwien, A.R. (1997). Knowledge and information about ADHD: Evidence of cultural differences among African-American and white parents. *Social Science & Medicine, 46,* 919-928.

Campbell, S.B., Perce, E.W., March, C.L., Ewing, L.J., & Szumowski, E.K. (1994). Hard-to-manage preschoolers: Symptomatic behaviors across contexts and time. *Child Development, 65,* 836-851.

Cappella, E., Frazier, S.L., Atkins, M.S., Schoenwald, S.K., & Glisson, C. (2008). Enhancing schools' capacity to support children in poverty: An ecological model of school-based mental health services. *Administration and Policy in Mental Health, 35,* 395-409. doi: 10.1007/s10488-008-0182-y.

Cappella, E., & Larner, M. (1999). America's schoolchildren: Past, present, and future. *The Future of Children, 9,* 21-29. doi: 10.2307/1602702.

Castellanos, X., Sonuga-Barke, E., Milham, M., & Tannock, R. (2006). Characterizing cognition in ADHD: beyond executive dysfunction. *Trends in Cognitive Sciences, 10* (3), 117-123. doi: 10.1016/j.tics.2006.01.011.

Castonguay, L.G., Constantino, M.J., McAleavey, A.A., & Goldfried, M.R. (2010). The therapeutic alliance in cognitive-behavioral therapy. In J.C. Muran & J.P. Barber (Eds.), *The therapeutic alliance: An evidence-based guide to practice* (pp. 150-171). New York: The Guilford Press.

Centers for Disease Control (CDC) (2005). Mental health in the United States: Prevalence of diagnosis and medication treatment for attention-deficit/hyperactivity disorder-United States, 2003. *Morbidity and Mortality Weekly Report, 54,* 842-847. Retrieved from http://www.cdc.gov/mmwr/PDF/wk/mm5434.pdf.

Chronis, A.M., Chacko, A., Fabiano, G.A., Wymbs, B.T., & Pelham, W.E. (2004). Enhancements to the behavioral parents training paradigm for families of children with ADHD: Review and future directions. *Clinical Child and Family Psychology Review, 7,* 1-27.

Chronis, A.M., Jones, H., & Raggi, V. (2006). Evidence-based psychosocial treatments for children and adolescents with attention-deficit/hyperactivity disorder. *Clinical Psychology Review, 26,* 486-502.

Clarke, A.R., Barry, R.J., McCarthy, R., & Selikowitz, M. (1998). EEG analysis in attention deficit /hyperactivity disorder: A comparative study of two subtypes. *Psychiatry Research, 81,* (1), 19-29.

Clarke, L., Ungerer, J., & Chahoud, K. (2002). Attention deficit hyperactivity disorder is associated with attachment insecurity. *Clinical Child Psychology and Psychiatry, 7,* 197-201.

Conduct Problems Prevention Research Group (1992). A developmental and clinical model for the prevention of conduct disorder: The FAST Track Program. *Development and Psychopathology, 4,* 509-527.

Cooper, P. & McIntyre, D. (1993). Commonality in teachers' and pupils' perceptions of effective teaching and learning. *British Journal of Special Needs Education, 14,* 122-131.

Cooper, P. & Tiknaz, Y. (2007). *Nurture groups in school and at home: Connecting with children with social, emotional, and behavioural difficulties.* London: Jessica Kingsley.

Cooper, P. & Whitebread, D. (2007). The effectiveness of nurture groups on student progress: Evidence from a national research study. *Emotional and Behavioural Difficulties, 12,* 171-190.

Corrigan, P.W., Bodenhausen, G., Markowitz, F., Newman, L., Rasinski, K., & Watson, A. (2003). Demonstrating translational research for mental health services: an example from stigma research. *Mental Health Services Research, 5*(2), 79-88.

Crespi, T.D. (2009). Group counseling in the schools: Legal, ethical, and treatment issues in school practice. *Psychology in the Schools, 46*(3), 273-280. doi: 10.1002/pits.20373.

Crits-Christoph, P., & Mintz, J. (1991). Implications of therapist effects for the design and analysis of comparative studies of psychotherapies. *Journal of Consulting and Clinical Psychology, 59,* 20-26.

The Council of State Governments' (CSG). *The Healthy States Initiative: A Partnership to Promote Public Health.* Retrieved January 24, 2010, from http://www.healthystates.csg.org/NR/rdonlyres/0DA27BE6-8FB0-4E26-9946-234391B5E2A8/0/SchoolMentalHealthLPB.pdf.

Dailey, E., & Rosenberg, M. (1994). ADD, computers, and learning: Using computers to help children with ADD become efficient learners. *Attention, 1*(2), 8-16.

Daly, B., Creed, T., Xanthopoulos, M., & Brown R. (2007). Psychosocial treatments for children with attention deficit/hyperactivity disorder. *Neuropsychology Review, 17,* 73-89.

Dansforth, J.S., Barkley, R.A., & Stokes, T.F. (1991). Observations of parent-child interactions with hyperactive children: Research and clinical implications. *Clinical Psychology Review, 11,* 703-727.

DfEE. (2004). *Every Child Matters: Change for Children*: Department for Education and Skills.

Dingfelder, S.F. (2005). Fresh funding for translational research. *Monitor, 36*(4), 66. Retrieved from http://www.apa.org/monitor/apr05/funding.aspx February 3, 2010.

Douglas, V.I. (1983). Attention and cognitive problems. In M. Rutter (Ed.), *Developmental neuropsychiatry* (pp. 280-329). New York: Guilford Press.

Drotar, D., Stein, R., & Perrin, E. (1995). Methodological issues in using the child behavior checklist and its related instruments in clinical psychology research. *Journal of Clinical Child Psychology, 24,* 184-192.

Duncan, G.J., Brooks-Gunn, J., & Klebanov, P.K. (1994). Economic deprivation and early childhood development. *Child Development, 65,* 296-318.

DuPaul, G.J., & Weyandt, L.L. (2006). School-based intervention for children with attention deficit hyperactivity disorder: Effects on academic, social, and behavioral functioning. *International Journal of Disability, Development and Education, 53*(2), 161-176. doi: 10.1080/10349120600716141.

DuPaul, G.J. & Eckert, T.L. (1997). The effects of school-based interventions for attention deficit hyperactivity disorder: A meta-analysis. *School Psychology Review, 26,* 5-27.

DuPaul, G.J., Ervin, R.A., Hook, C.L., & McGoey, K.E. (1998). Peer tutoring for children with attention deficit hyperactivity disorder: Effects on classroom behavior and academic performance. *Journal of Applied Behavior Analysis, 31,* 579-592.

DuPaul, G.J., & Stoner, G. (2003). *ADHD in the schools: Assessment and intervention strategies* (2nd ed.). New York: Guilford.

Evans, S.W. (1999). Mental health services in schools: Utilization, effectiveness, and consent. *Clinical Psychology Review, 19,* 165-178.

Evans, S.W. (2005). Introduction to special issue on school-based treatment of children and adolescents with ADHD. *Journal of Attention Disorders, 9,* 245-247.

Evans, S.W., Allen, J., Moore, S., & Strauss, V. (2005). Measuring symptoms and functioning of youth with ADHD in middle schools. *Journal of Abnormal Child Psychology, 33,* 695-706.

Evans, S.W., Axelrod, J.L., & Langberg, J. (2004). Efficacy of a school-based treatment program for middle school youth with ADHD: Pilot data. *Behavior Modification, 28,* 528-547.

Evans, S.W., Green, A.L., & Serpell, Z.N. (2005). Community participation in the treatment development process using community development teams. *Journal of Clinical Child and Adolescent Psychology, 34,* 765-771.

Evans, S.W., Langberg, J., Raggi, V., Allen, J., & Buvinger, E.C. (2005). Development of a school-based treatment program for middle school youth with ADHD. *Journal of Attention Disorders, 9,* 343-353.

Evans, S.W., Timmins, B., Sibley, M., White, C., Serpell, Z., & Schultz, B. (2006). Developing coordinated, multimodal, school-based treatment for young adolescents with ADHD. *Education and Treatment of Children, 29* (2), 359-378.

Faraone, S., Biederman, J., & Monuteaux, M.C. (2002). Further evidence for the diagnostic continuity between child and adolescent ADHD, *Journal of Attention Disorders, 6,* 5-13.

Feingold, B.F. (1975). Hyperkinesis and learning disabilities linked to artificial food flavors and colors. *American Journal of Nursing, 75*(5), 797-803. doi: 10.2307/3423460

Friedman, R.M., Katz-Levey, J.W., Manderschied, R.W., & Sondheimer, D.L. (1996). Prevalence of serious emotional disturbance in children, adolescents. In R.W. Manderschied & M.A. Sonnenschein (Eds.), *Mental health, United States, 1996* (pp. 71-88). Rockville, MD: U.S. Department of Health and Human Services.

Gaertner, A.E., Fite, P.J., & Colder, C.R. (2010). Parenting and friendship quality predictors of internalizing and externalizing symptoms in early adolescence. *Journal of Child and Family Studies, 19,* 101-108.

Garber, J., & Dodge, K.A. (1991). (Eds.). *The development of emotional regulation and dysregulation.* Cambridge, England: Cambridge University Press.

Gilliam, W.S. (2007). *Early childhood consultation partnership: Results of a random-controlled evaluation.* Final report and executive summary. New Haven, CT: Yale University School of Medicine, Child Study Center.

Gomes, R., Burns, G.L., Walsh, J.A., & De Moura, M.A. (2003). A multitrait-multisource confirmatory factor analytic approach to the construct validity of ADHD rating scales. *Psychological Assessment, 15,* 3-16.

Goodyear, P. & Hynd, G. (1992). Attention deficit disorder with (ADD/H) and without (ADD/WO) hyperactivity: Behavioral and neuropsychological differentiation. *Journal of Clinical Child Psychology, 21,* 273-304.

Greenberg, M., Kusche, C., Cook, E., & Quamma, J. (1995). Promoting emotional competence in school-aged children: The effects of the PATHS curriculum. *Development and Psychopathology*, *7,* 117-136.

Guevara, J.P., Feudtner, C., Romer, D., et al. (2005). Fragmented care for inner-city minority children with attention-deficit/hyperactivity disorder. *Pediatrics, 116,* 512-517.

Gumpel, T.P. (2007). Are social competence difficulties caused by performance or acquisition deficits? The importance of self-regulatory mechanisms. *Psychology in the Schools, 44*(4), 351-372. doi: 10.1002/pits.20229

Hagermoser Sanetti, L.M. & Kratochwill, T.R. (2009). Toward developing a science of treatment integrity: introduction to the special series. *School Psychology Review, 38,* 445-459.

Hallowell, E., & Ratey, J. (1994). *Driven to distraction.* New York: Pantheon Books.

Hawley, K.M., & Weisz, J.R. (2005, November). *Child, therapist, and setting factors and the transportability of evidence-based treatments to clinical practice.* Poster presented at the 39th Annual Convention of the Association for Behavioral and Cognitive Therapies, Washington, DC.

Henggeler, S.W., Schoenwald, S.K., Rowland, M.D., & Cunningham, P.B. (2002). *Serious emotional disturbance in children and adolescents: Multisystemic therapy*. New York: Guildford Press.

Henry, W.P., Strupp, H.H., Schacht, T.E., & Gaston, L. (1994). Psychodynamic approaches. In A.E. Bergin & S.L. Garfield (Eds.), *Handbook of psychotherapy and behavior change* (4th ed., pp. 467-508). New York: Wiley & Sons.

Hess, D.R. (2004). Retrospective studies and chart reviews. *Respiratory Care, 49*(10), 1171-1174.

Ho, B.S. (2002). Application of participatory action research to family-school intervention. *School Psychology Review, 31,* 106-121.

Horner, R.H. & Sugai, G. (2005). School-wide positive behavior support: An alternative approach to discipline in schools. In L. Bambara & L. Kern (Eds.), *Positive behavior support* (pp. 359-390). New York, NY: Guildford Press.

Horner, R., Sugai, G., Smolkowski, K., Todd, A., Nakasato, J., & Esperanza, J. (2009). A randomized control trial of school-wide positive behavior support in elementary schools. *Journal of Positive Behavioral Interventions, 11,* 133-144.

Hoza, B., Gerdes, A., Mrug, S., Hinshaw, S., Bukowski, W., Gold, J., Arnold, L., Abikoff, H., Conners, C., Elliott, G., Greenhill, L., Hechtman, L., Jensen, P., Kraemer, H., March, J., Newcorn, J., Severe, J., Swanson, J., Vitiello, B., Wells, K., & Wigal, T. (2005). Peer-assessed outcomes in the multimodal treatment study of children with attention deficit hyperactivity disorder. *Journal of clinical Child and Adolescent Psychology, 34* (1), 74-86.

IDEIA (2008). *Individuals with Disabilities Education Improvement Act. Pub. L. No. 108-446.*

Iszatt, J. & Wasilewska, T. (1997). Nurture groups: An early intervention model enabling vulnerable children with emotional and behavioural difficulties to integrate successfully into school. *Educational and Child Psychology, 14,* 121-139.

Johnston, C., & Mash, E.J. (2001). Families of children with attention-deficit/hyperactivity disorder: Review and recommendations for future research. *Clinical Child and Family Psychology Review, 4,* 183-207.

Juvonen, J., Le, V., Kaganoff, T., Augustine, C., & Louay, C. *Focus on the Wonder Years: Challenges Facing American Middle School.* Rand Education. Retrieved from http://www.rand.org/pubs/monographs/2004/RAND_MG139.pdf January 24, 2010.

Kam, C.M., Greenberg, M., & Kusche, C. (2004). Sustained effects of the PATHS curriculum on the social and psychological adjustment of children in special education. *Journal of Emotional & Behavioral Disorders, 12,* 66-78.

Kazdin, A.E. (1990). Assessment of childhood depression. In A.M. LaGreca (Ed.), *Through the eyes of the child: Obtaining self-reports from children and adolescents* (pp. 189-233). Boston, MA: Allyn and Bacon.

Kazdin, A.E. & Nock, M.K. (2003). Delineating mechanisms of change in child and adolescent therapy: methodological issues and research recommendations. *Journal of Child Psychology and Psychiatry, 44,* 1116-1129.

Knoff, H., & Batsche, G. (1995). Project ACHIEVE: Analyzing a school reform process for at-risk and underachieving students. *School Psychology Review, 24,* 579-603.

Knoff, H. (2008). *Project ACHIEVE Overview and Briefing Document.* Retrieved from http://www.projectachieve.info/images/Project_ACHIEVE_Newest_Fact_Sheet_808.pdf January 30, 2010.

Kochanska, G., DeVet, K., Goldman, M., Murray, K., & Putnam, S.P. (1994). Maternal reports of conscience development and temperament in young children. *Child Development, 65,* 852-868.

Korenman, S., Miller, J.E., & Sjaastad, J.E. (1995). Long-term poverty and child development in the United States: Results from the NLSY. *Children and Youth Services Review, 17,* 127-155.

Koshland. D.E. (1993). Basic research (I). *Science, 259,* 291. Retrieved from http://www.sciencemag.org/cgi/reprint/259/5093/291.pdf?ijkey=451ab14026753ba19a8b0fb62e8b8e98cc740f8f February 3, 2010.

Kratochwill, T.R. (2006). Evidence-based interventions and practices in school psychology: The scientific basis of the profession. In R.F Subotnik & H.J. Walberg (Eds.), *The scientific basis of educational productivity* (pp. 229-267). Greenwich, CT: Information Age Publishing.

Kratochwill, T.R., McDonald, L., Levin, J.R., Scalia, P.A., & Coover, G. (2009). Families and schools together: An experimental study of multi-family support groups for children at risk. *Journal of School Psychology, 47,* 245-265. doi: 10.1016/j.jsp.2009.03.001.

Kratochwill. T.R., McDonald, L., Levin, J.R., Young Bear-Tibbetts, H., & Demaray, M.K. (2004). Families and schools together: an experimental analysis of parent-mediated multi-family group program for American Indian children. *Journal of School Psychology, 42,* 359-383.

Lahey, B.B. & Carlson, C.L. (1992). Validity of the diagnostic category of attention deficit disorder without hyperactivity: A review of the literature. In S.E. Shaywitz & B. Shaywitz (Eds.), *Attention deficit disorder comes of age: Toward the twenty-first century* (pp. 119-144). Austin, TX: Pro-Ed.

Landau, S.L., Milich, R., & Diener, M.B. (1998). Peer relations of children with attention-deficit hyperactivity disorder. *Reading and Writing Quarterly, 14,* 83-105.

Larsson, J.O., Larsson, H., & Lichtenstein, P. (2004). Genetic and environmental contributions to stability and change of ADHD symptoms between 8 and 13 years of age: A longitudinal twin study. *Journal of American Academy of Child & Adolescent Psychiatry, 43* (10), 1267-1275.

Lawson, H.A., & Sailor, W. (2000). Integrating services, collaborating, and developing connections with schools. *Focus on Exceptional Children, 33,* 1-22.

Leslie, L., Lambros, K., Aarons, G., Haine, R., & Hough, R. (2008). School-based service use by youth with ADHD in public-sector settings. *Journal of Emotional and Behavioral Disorders, 16,* 163-177.

LeFever, G.B., Villers, M.S., & Morrow, A.L. (2002). Parental perceptions of adverse educations outcomes among children diagnosed and treated for ADHD: A call for improved school/provider collaboration. *Psychology in the Schools, 39,* 63-71.

Lerman, D.C. (2003). From the laboratory to community: Translational research in behavior analysis. *Journal of Applied Behavior Analysis, 36,* 415-419.

Lewis, T.J., & Sugai, G. (1999). Effective behavior support: A systems approach to proactive school-wide management. *Focus on Exceptional Children, 31,* 1-24.

Lijffijt, M., Kenemans, J.L., Verbaten, M.N., & VanEngeland, H. (2005). A meta-analytic review of stopping performance in attention-deficit/hyperactivity disorder: Deficient inhibitory motor control? *Journal of Abnormal Psychology, 114,* 216-222.

Luiselli, J.K., Putnam, R.F., Handler, M.W., & Feinberg, A.B. (2005). Whole-school positive behavior support: Effects on student discipline problems and academic performance. *Educational Psychology, 25,* 183-198.

Lundahl, B., Risser, H.J., & Lovejoy, C. (2006). A meta-analysis of parent training: Moderators and follow-up effects. *Clinical Psychology Review, 26,* 86-104.

Marcon, R.A. (1999). Positive relationships between parent school involvement and public school inner-city preschoolers' development and academic performance. *School Psychology Review, 28,* 395-412.

Marder, C., Wagner, M., & Sumi, C. (2003). The social adjustment of youth with disabilities. In: *The Achievements of Youth with Disabilities During Secondary School* (5.1-5.18). Menlo Park, CA: SRI International.

Martinussen, R., Hayden, J., Hogg-Johnson, S., & Tannock, R. (2005). A meta-analysis of working memory impairments in children with attention-deficit/hyperactivity disorder. *Journal of American Academy of Child & Adolescent Psychiatry, 44,* 377-384. doi: 10.1097/01.chi.0000153228.72591.73.

McCormick, L.H. (2003). ADHD treatment and academic performance: A case series. *Journal of Family Practice, 52,* 620-626.

McDonald, L., Billingham, S., Conrad, T., Morgan, A., & Payton, E. (1997). Families and Schools Together (FAST): Integrating community development with clinical strategy. *Families in Society, 78*(2), 140-155.

McDonald, L., & Frey, H.E. (1999). *Families and Schools Together: Building relationships. OJJDP Bulletin.* Washington, DC: U.S. Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention.

McDonald, L., Moberg, D.P., Brown, R., Rodriguez-Espiricueta, I., Flores, N., Burke, M.P., & Coover, G. (2006). After-school multifamily groups: a randomized controlled trial involving low-income, urban, Latino children. *Children and Schools, 18,* 25-34.

McLeod, J.D. & Shanahan, M.J. (1993). Poverty, parenting, and children's mental health. *American Sociological Review, 58,* 351-366.

Merrell, K.W. (1994). *Assessment of behavioral, social, and emotional problems: Direct and objective methods for use with children and adolescents.* New York: Longman.

Merrell, K.W. (2003). *Behavioral, social, and emotional assessment of children and adolescents* (2nd ed.). Mahwah, NJ: Erlbaum.

Meyers, J. & Nastasi, B. (1999). Primary prevention in school settings. In C. Reynolds & T. Gutkin (Eds.), *The handbook of school psychology* (3rd ed.; pp. 764-799). New York: John Wiley.

Mihalic, S., Fagan, A., & Argamaso, S. (2008). Implementing the life skills training drug prevention program: Factors related to implementation fidelity. *Implementation Science, 3,* 1-16.

Mikami, A., Huang-Pollock, C., Pfiffner, L., McBurnett, K., & Hangai, D. (2007). Social skills differences among attention-deficit/hyperactivity disorder in a chat room assessment task. *Journal of Abnormal Child Psychology, 35,* 509-521.

Mill, J. & Petronis, A. (2008). Pre- and peri-natal environmental risks for attention-deficit hyperactivity disorder (ADHD): the potential role of epigenetic processes in mediating susceptibility. *The Journal of Child Psychology and Psychiatry, 49,* 1020-1030.

Miranda, A., Jarque, S., & Tarraga, R. (2006). Interventions in school settings for students with ADHD. *Exceptionality, 14,* 35-52.

Mrug, S., Hoza, B., Gerdes, A., Hinshaw, S., Arnold, L., Hechtman, L., & Pelham, W. (2008). Discriminating between children with ADHD and classmates using peer variables. *Journal of Attention Disorders, 12,* 372-380. doi: 10.1177/1087054708314602.

MTA Cooperative Group (1999a). A 14-month randomized clinical trial of treatment strategies for attention deficit hyperactivity disorder (ADHD). *Archives of General Psychiatry, 56,* 1073-1086.

Munsey, C. (2010). Clinical treatment guidelines are coming. *Monitor on Psychology,\ 41*(5), 45.

Murray, D., Rabiner, D., Schulte, A., & Newitt, K. (2008). Feasibility and integrity of parent-teacher consultation interventions for ADHD students. *Child Youth Care Forum, 37,* 111-126. doi: 10.1007/s10566-008-9054-6.

Najavits, L.M., Weiss, R.D., Shaw, S.R., & Dierberger, A.E. (2000). Psychotherapists' views of treatment manuals. *Professional Psychology: Research and Practice, 31,* 404-408.

Nastasi, B.K., Varjas, K., Bernstein, R., & Pluymert, K. (1997). *Exemplary mental health programs: school psychologists as mental health service providers.* Bethesda, MD: National Association of School Psychologists.

National Advisory Mental Health Council. (2000). *Translating behavioral science into action: Report of the National Advisory Mental Health Council Behavioral Science Workgroup.* Bethesda, MD: National Institute of Mental Health.

The National Institute for Healthcare Management Research and Education Foundation. (2005, February). *Children's Mental Health: An Overview and Kew Considerations For Health System Stakeholders.* NIHCM Foundation Issue Paper. Retrieved from http://nihcm.org/pdf/CMHReport.pdf

The National Institutes of Health (1982, January). *Defined Diets and Childhood Hyperactivity: National Institutes of Health Consensus Development Conference Statement.* Retrieved from http://consensus.nih.gov/1982/1982DietHyperactivity032html.htm

Needleman, H.L., Gunnoe, C., Leviton, A., Reed, R., Peresie, H., Maher, C., & Barrett, P. (1979). Deficits in psychologic and classroom performance of children with elevated dentine lead levels. *New England Journal of Medicine, 300,* 689-695.

Nigg, J.T. (2006). *What Causes ADHD? Toward a Multi-Path Model for Understanding What Goes Wrong and Why*. New York: Guilford Press.

Noddings, N. (1995). *Philosophy of education.* Boulder, CO.: Westview.

No Child Left Behind Act of 2001 (2002), Public Law No. 107-110, 115 Stat. 1425

O'Connor, T. & Colwell, J. (2002). The effectiveness and rationale of the 'NG' approach to helping children with emotional and behavioral difficulties remain within mainstream education. *British Journal of Special Education, 29*(2), 96-100.

Office for National Statistics (2001). *National Statistics: The One Number Census.* Retrieved from http://www.statistics.gov.uk/census2001/onc.asp

Olfson, M., Gameroff, M.J., Marcus, S.C., & Jenson, P.S. (2003). National trends in the treatment of attention deficit hyperactivity disorder. *American Journal of Psychiatry, 160,* 1071-1077.

O'Neill, M.E. & Douglas, V.I. (1991). Study strategies and story recall in attention deficit disorders and reading disabilities. *Journal of Abnormal Child Psychology, 19,* 671-692.

OSEP Center on Positive Behavioral Interventions and Supports. (2004). *School-wide positive behavior support.* Eugene, OR: University of Oregon.

Owens, J.S., Murphy, C.E., Richerson, L., Girio, E.L., & Himawan, L.K. (2008). Science to practice in underserved communities: The effectiveness of school mental health programming. *Journal of Clinical Child & Adolescent Psychology, 37*(2), 434-447. doi: 10.1080/15374410801955912.

Park, A. (2010, May 17). Study: A link between pesticides and ADHD. *Time.* Retrieved from http://www.time.com/time/health/article/0,8599,1989564,00.html

Pastor, P. & Reuben, C. (2008). Diagnosed attention deficit hyperactivity disorder and learning disability: United States, 2004-2006: Data from the national health interview survey. *Vital and Health Statistics, 10,* 1-15.

Pelham, W.E. (2000). Implications of the MTA study for behavioral and combined treatments. *The ADHD Report, 8,* 9-16.

Pelham, W.E., Fabiano, G.A., & Massetti, G.M. (2005). Evidence-based assessment of attention deficit hyperactivity disorder in children and adolescents. *Journal of Clinical Child and Adolescent Psychology, 34,* 449-476.

Pelham, W.E., Gnagy, E.M., Greiner, A.R., Hoza, B., Hinshaw, S.P., Swanson, J.M., Simpson, S., Shapiro, C., Bukstein, O., Baron-Myak, C., & McBurnett, K. (2000). Behavioral vs. behavioral and pharmacological treatment in ADHD children attending a summer treatment program. *Journal of Abnormal Child Psychology, 28*(6), 507-526.

Pelham, W.E. & Hoza, B. (1996). Intensive treatment: A summer treatment program for children with ADHD. In E. Hibbs, & P. Jensen (Eds.), *Psychosocial treatments for children and adolescent disorders: Empirically based strategies for clinical practice* (pp. 311-340). New York: APA Press.

Pelham, W.E., Wheeler, T., & Chronis, A. (1998). Empirically supported psychosocial treatments for ADHD. *Journal of clinical Child Psychology, 27,* 190-205.

Pennington, B.F. & Ozonoff, S. (1996). Executive functions and developmental psychopathology. *Journal of Child Psychology and Psychiatry, 37,* 51-87.

Perry, D.F., Dunne, M.C., McFadden, L., & Campbell, D. (2008). Reducing the risk for preschool expulsion: Mental health consultation for young children with challenging behaviors. *Journal of Child and Family Studies, 17,* 44-54.

Reynolds, S. & Kearney, M. (2007). Nurture groups: the answer to everything?, paper presented to the *British Psychological Society Division of Educational and Child Psychology Annual Conference.* Glasgow, Scotland, February.

Ringeisen, H., Henderson, K., & Hoagwood, K. (2003). Context matters: Schools and the "research to practice gap" in children's mental health. *School Psychology Review, 32,* 153-168.

Rolls, E.T., Hornak, J., Wade, D., & McGrath, J. (1994). Emotional-related learning in patients with social and emotional changes associated with frontal lobe damage. *Journal of Neurology, Neurosurgery, and Psychiatry, 57,* 1518-1524.

Rones, M., & Hoagwood, K. (2000). School-based mental health services: A research review. *Clinical Child and Family Psychology review, 3*(4), 223-241.

Rygaard, N.P. (2006). *Attachment disorder: A practical guide to therapy.* New York: Springer.

Sagvolden, T., Johansen, E.B., Aase, H., & Russell, V.A. (2005). A dynamic developmental theory of attention-deficit/hyperactivity disorder (ADHD) predominantly hyperactive/impulsive and combined subtypes. *Behavioral and Brain Sciences, 28,* 397- 419.

Schachar, R.K., Chen, S., & Logan, G.D. (2004). Evidence for an error monitoring deficit in attention deficit hyperactivity disorder. *Journal of Abnormal Psychology, 32,* 285-293.

Schnittker, J. (2003). Misgivings of medicine? African Americans' skepticism of psychiatric medication. *Journal of Health and Social Behavior, 44,* 506-524.

Schnoll, R., Burshteyn, D., & Cea-Aravena, J. (2003). Nutrition in the treatment of Attention Deficit Hyperactivity Disorder: A neglected by important aspect. *Applied Psychophysiology and Biofeedback, 28*(1), 63-75.

Schoenwald, S.K. & Hoagwood, K. (2001). Effectiveness, transportability, and dissemination of interventions: What matters when? *Psychiatric Services, 52,* 1190-1197.

Seidman, L.J., Biederman, J., Faraone, S.V., Millberger, S., Norman, D., Seiverd, K., Benedict, K., Guite, J., Mick, E., & Kiely, K. (1995). Effects of family history and comorbidity on the neuropsychological performance of children with ADHD: Preliminary findings. *Journal of the American Academy of Child and Adolescent Psychiatry, 34,* 1015-1024.

Shapiro, E.G., Hughes, S.J., August, G.J., & Bloomquist, M.L. (1993). Processing emotional information in children with attention deficit hyperactivity disorder. *Developmental Neuropsychology, 9,* 207-224.

Shue, K. & Douglas, V. (1992). Attention deficit hyperactivity disorder and the frontal lobe syndrome. *Brain and Cognition, 20* (1), 104-124. doi: 10.1016/0278-2626(92)90064-S.

Stallard, P., Simpson, N., Anderson, S., Hibbert, S., & Osborn, C. (2007). The FRIENDS emotional health programme: Initial findings from a school-based project. *Child and Adolescent Mental health, 12*(1), 32-37. doi: 10.1111/j.1474-3588.2006.00421.x.

Stiefel, I. (1997). Can disturbance in attachment contribute to attention deficit disorder? A case discussion. *Clinical Child Psychology and Psychiatry, 2*(1), 45-64. doi: 10.1177/1359104597021005.

Swanson, J.M., McBurnett, K., Christian, D.L., & Wigal, T. (1995). Stimulant medication and treatment of children with ADHD. In T.H. Ollendick, & R.J. Prinz (Eds.), *Advances in clinical psychology, Vol. 17* (pp. 265-322). New York: Pelnum.

Swanson, J.M., Kraemer, H.C., Hinshaw, S.P., Arnold, E.L., Conners, K.C., Abikoff, H.B., Clevenger, W., Davies, M., Elliott, G.R., Wigal, T., Wu, M., Greenhill, L.L., Hechtman, L., Hoza, B., Jensen, P.S., March, J.S., Newcorn, J.H., Owens, E.B., Pelham, W.E., Schiller, E., Severe, J.B., Simpson., S., Vitiello, B., & Wells, K. (2001). Clinical relevance of the primary findings of the MTA: Success rates based on severity of ADHD and ODD symptoms at the end of treatment. *Journal of the American Academy of Child & Adolescent Psychiatry, 40*(2), 168-179.

Tashiro, T., & Mortensen, L. (2006). Translational research: How social psychology can improve psychotherapy. *American Psychologist, 61*(9), 959-966. doi: 10.1037/0003-066X.61.9.959

Thomson, P. (2002). *Schooling the rustbelt kids: Making the difference in changing times.* Stoke-on-Trent: Trentham Books.

Ullman, D.G., Barkley, R.A., & Brown, H.W. (1978). The behavioral symptoms of hyperkinetic children who successfully responded to stimulant drug treatment. *American Journal of Orthopsychiatry, 48,* 425-437.

Upshur, C., Wenz-Gross, M., & Reed, G. (2009). A pilot study of early childhood mental health consultation for children with behavioral problems in preschool. *Early Childhood Research Quarterly, 24,* 29-45. doi:10.1016/j.ecresq.2008.12.002.

U.S. Department of Education (2002). *The President's Commission on Excellence in Special Education Report: A New Era: Revitalizing Special Education for Children and Their Families.* Washington, DC: U.S. Government Printing Office.

U.S. Department of Justice. (2004). *A guide to disability right laws.* Retrieved September, 23, 2009, from http://www.usdoj.gov/crt/ada/cguide.htm

U.S. Public Health Service. (2000). *Report of the Surgeon General's conference on children's mental health: A national action agenda.* Washington, DC: Author.

Vernberg, E.M., Roberts, M.C., & Nyre, J.E. (2008). The intensive mental health program: Development and structure of the model of intervention for children with serious emotional disturbances. *Journal of Child and Family Studies, 17,* 169-177. doi: 10.1007/s10826-007-9157-y.

Vygotsky, L.S. (1978). Mind and society: The development of higher mental processes. Cambridge, MA: Harvard University Press.

Wadsworth, M.E., & Achenbach, T.M. (2005). Explaining the link between low socioeconomic status and psychopathology: Testing two mechanisms of the social causation hypothesis. *Journal of Consulting and Clinical Psychology, 73,* 1146-1153. doi: 10.1037/0022-006X.73.6.1146.

Weiss, B., Harris, V., Catron, T., & Han, S.S. (2003). Efficacy of the RECAP intervention program for children with concurrent internalizing and externalizing problems. *Journal of Consulting and Clinical Psychology, 71*(2), 364-374. doi: 10.1037/0022-006X.71.2.364.

Weissberg, R.P., Kumpfer, K.L., & Seligman, M.P. (2003). Prevention that works for children. *American Psychologist, 58,* 425-432.

Weist, M.D., & Albus, K.E. (2004). Expanded school mental health: Exploring program details and developing the research base. *Behavior Modification, 28,* 463-471.

Weist, M.D., & Paternite, C.E. (2006). Building an interconnected policy-training-practice-research agenda to advance school mental health. *Education & Treatment of Children, 29,* 173-196.

Weisz, J.R., Jensen-Doss, A.J., & Hawley, K.M. (2005). Youth psychotherapy outcome research: A review and critique of the evidence base. *Annual Review of Psychology, 56,* 337-363. doi: 10.1146/annurev.psych.55.090902.141449.

Whalen, C.K., Henker, B., Collins, B.E., McAulife, S., & Vaux, A. (1979). Peer interaction in structured communication task: Comparisons of normal and hyperactive boys and of methylphenidate (Ritalin) and placebo effects. *Child Development, 50,* 388-401.

Wheeler, J. & Carlson, C.L. (1994). The social functioning of children with ADD with hyperactivity and ADD without hyperactivity; A comparison of peer relations and social deficits. *Journal of Emotional and Behavioral Disorders, 2,* 2-12.

Woolf, S.H. (2008). The meaning of translational research and why it matters. *Journal of the American Medical Association, 299*(2), 211-213. doi: 10.1001/jama.2007.26.

Zentall, S. (1993). Research on the educational implications of attention deficit hyperactivity disorder. *Exceptional Children, 60* (2), 143-153

Tables

Table 1

Demographic Characteristics of Participants Based on Diagnosis (N=115)

	ADHD		No ADHD		Total	
Characteristic	n	%	n	%	n	%
Age						
6	3	5	2	3.6	5	4.3
7	7	11.7	1	1.8	8	7
8	10	16.7	4	7.3	14	12.2
9	10	16.7	17	30.9	27	23.5
10	10	16.7	4	7.3	14	12.2
11	7	11.7	7	12.7	14	12.2
12	6	10	5	9.1	11	9.6
13	4	6.7	6	10.9	10	8.7
14	1	1.7	5	9.1	6	5.2
15	1	1.7	3	5.5	4	3.5
16	1	1.7	1	1.8	2	1.7
Race						
Caucasian	16	26.7	6	10.9	22	19.1
African American	44	73.3	40	72.7	84	73
Asian	0	0	2	3.6	2	1.7
Other	0	0	7	12.7	7	6.1
Gender						

Male	44	73.3	40	72.7	84	73
Female	16	26.7	15	27.3	31	27

Table 2

Mean and Standard Deviations for Scores on the Internalizing Subscale of the CBCL at Time 1 and Time 2 Based on Gender and Diagnosis

	Diagnosis	Sex	Mean	Standard Deviation	N
Internalizing CBCL 1	ADHD	Male	9.41	7.346	44
		Female	11.50	9.402	16
		Total	9.97	7.917	60
	Non-ADHD	Male	10.17	9.021	40
		Female	13.64	11.862	14
		Total	11.07	9.863	54
	Total	Male	9.77	8.145	84
		Female	12.50	10.487	30
		Total	10.49	8.855	114
Internalizing CBCL 2	ADHD	Male	8.84	8.408	44
		Female	13.94	8.910	16
		Total	10.20	8.768	60
	Non-ADHD	Male	8.88	8.244	40
		Female	9.93	11.007	14
		Total	9.15	8.941	54
	Total	Male	8.86	8.280	84
		Female	12.07	9.976	30
		Total	9.70	8.827	114

Table 3

Mean and Standard Deviations for Scores on the Externalizing Subscale of the CBCL at Time 1 and Time 2 Based on Gender and Diagnosis

	Diagnosis	Sex	Mean	Standard Deviation	N
Externalizing CBCL 1	ADHD	Male	23.82	11.556	44
		Female	22.94	13.259	16
		Total	23.58	11.924	60
	Non-ADHD	Male	19.47	11.485	40
		Female	20.71	10.986	14
		Total	19.80	11.268	54
	Total	Male	21.75	11.659	84
		Female	21.90	12.095	30
		Total	21.79	11.721	114
Externalizing CBCL 2	ADHD	Male	19.86	11.280	44
		Female	24.50	11.118	16
		Total	21.10	11.333	60
	Non-ADHD	Male	17.03	10.998	40
		Female	17.07	10.209	14
		Total	17.04	10.703	54
	Total	Male	18.51	11.171	84
		Female	21.03	11.174	30
		Total	19.18	11.178	114

Table 4

Mean and Standard Deviations for Scores on the ADHD Subscale of the CBCL at Time 1 and Time 2 Based on Gender and Diagnosis

	Diagnosis	Sex	Mean	Standard Deviation	N
ADHD	ADHD	Male	8.84	3.177	44
CBCL 1		Female	9.12	4.241	16
		Total	8.92	3.456	60
	Non-ADHD	Male	7.12	3.660	40
		Female	7.64	3.500	14
		Total	7.26	3.593	54
	Total	Male	8.02	3.502	84
		Female	8.43	3.919	30
		Total	8.13	3.603	114
ADHD	ADHD	Male	7.98	3.461	44
CBCL 2		Female	9.13	4.544	16
		Total	8.28	3.774	60
	Non-ADHD	Male	6.33	3.245	40
		Female	6.36	3.543	14
		Total	6.33	3.291	54
	Total	Male	7.19	3.441	84
		Female	7.83	4.276	30
		Total	7.36	3.670	114

Table 5

Mean and Standard Deviations for Scores on the Internalizing Subscale of the TRF at Time 1 and Time 2 Based on Gender and Diagnosis

	Diagnosis	Sex	Mean	Standard Deviation	N
Internalizing TRF 1	ADHD	Male	7.16	7.859	44
		Female	10.12	9.479	16
		Total	7.95	8.343	60
	Non-ADHD	Male	8.50	7.818	40
		Female	10.47	9.508	15
		Total	9.04	8.269	55
	Total	Male	7.80	7.821	84
		Female	10.29	9.335	31
		Total	8.47	8.289	115
Internalizing TRF 2	ADHD	Male	8.16	6.365	44
		Female	4.56	6.995	16
		Total	7.20	6.673	60
	Non-ADHD	Male	8.85	8.763	40
		Female	8.87	6.696	15
		Total	8.85	8.191	55
	Total	Male	8.49	7.563	84
		Female	6.65	7.083	31
		Total	7.99	7.451	115

Table 6

Mean and Standard Deviations for Scores on the Externalizing Subscale of the TRF at Time 1 and Time 2 Based on Gender and Diagnosis

	Diagnosis	Sex	Mean	Standard Deviation	N
Externalizing TRF 1	ADHD	Male	24.27	14.118	44
		Female	28.44	15.366	16
		Total	25.38	14.448	60
	Non-ADHD	Male	26.07	12.431	40
		Female	21.53	15.793	15
		Total	24.84	13.433	55
	Total	Male	25.13	13.293	84
		Female	25.10	15.709	31
		Total	25.12	13.913	115
Externalizing TRF 2	ADHD	Male	21.30	11.671	44
		Female	17.50	11.872	16
		Total	20.28	11.746	60
	Non-ADHD	Male	25.30	13.051	40
		Female	19.73	13.101	15
		Total	23.78	13.182	55
	Total	Male	23.20	12.436	84
		Female	18.58	12.323	31
		Total	21.96	12.522	115

Table 7

Mean and Standard Deviations for Scores on the ADHD Subscale of the TRF at Time 1 and Time 2 Based on Gender and Diagnosis

	Diagnosis	Sex	Mean	Standard Deviation	N
ADHD	ADHD	Male	17.73	6.086	44
TRF 1		Female	19.25	6.768	16
		Total	18.13	6.253	60
	Non-ADHD	Male	17.08	5.081	40
		Female	13.20	8.736	15
		Total	16.02	6.439	55
	Total	Male	17.42	5.606	84
		Female	16.32	8.244	31
		Total	17.12	6.403	115
ADHD	ADHD	Male	17.61	5.650	44
TRF 2		Female	14.94	7.066	16
		Total	16.90	6.114	60
	Non-ADHD	Male	16.63	5.701	40
		Female	12.80	8.377	15
		Total	15.58	6.680	55
	Total	Male	17.14	5.661	84
		Female	13.90	7.674	31
		Total	16.27	6.397	115

Table 8

Summary of Findings

Measure	F-Statistic (F)	Significance (p)	Effect Size (Cohen's d)
Gender Differences at Time 1			
CBCL Externalizing Scale	.030	.864	N.S
CBCL Internalizing Scale	1.736	.190	N.S
CBCL ADHD Scale	.534	.467	N.S
TRF Externalizing Scale	.004	.949	N.S
TRF Internalizing Scale	1.995	.161	N.S
TRF ADHD Scale	.797	.374	N.S
Differences Based on Diagnosis of ADHD at Time 1			
CBCL Externalizing Scale	1.532	.218	N.S
CBCL Internalizing Scale	.369	.545	N.S
CBCL ADHD Scale	3.781	.054	.44
TRF Externalizing Scale	.755	.387	N.S
TRF Internalizing Scale	.232	.631	N.S
TRF ADHD Scale	6.473	.012	.33
Differences Overtime			
CBCL Externalizing Scale	12.004	.001	.23
CBCL Internalizing Scale	1.943	.166	N.S
CBCL ADHD Scale	8.742	.004	.21

TRF Externalizing Scale	7.132	.009	.24
TRF Internalizing Scale	.539	.464	N.S
TRF ADHD Scale	2.226	.138	N.S
Differences Overtime Based on Diagnosis			
CBCL Externalizing Scale	.033	.856	N.S
CBCL Internalizing Scale	3.710	.057	.11
CBCL ADHD Scale	.311	.578	N.S
TRF Externalizing Scale	2.957	.088	N.S
TRF Internalizing Scale	.189	.665	N.S
TRF ADHD Scale	.484	.488	N.S
Gender Differences Overtime			
CBCL Externalizing Scale	1.931	.167	N.S
CBCL Internalizing Scale	.140	.709	N.S
CBCL ADHD Scale	.154	.696	N.S
TRF Externalizing Scale	3.002	.086	N.S
TRF Internalizing Scale	9.367	.003	.25
TRF ADHD Scale	2.823	.096	N.S

Note: CBCL = Child Behavior Checklist; TRF = Teacher Report Form; ADHD = attention-deficit/hyperactivity disorder; N.S = not significant